Journal
OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION

Contents continued on adv. pages 2 and 4

Vol. 132 **March 1, 1958** **No. 5**

Available now!

HYMIX

Hygromycin B Anthelmintic Compound

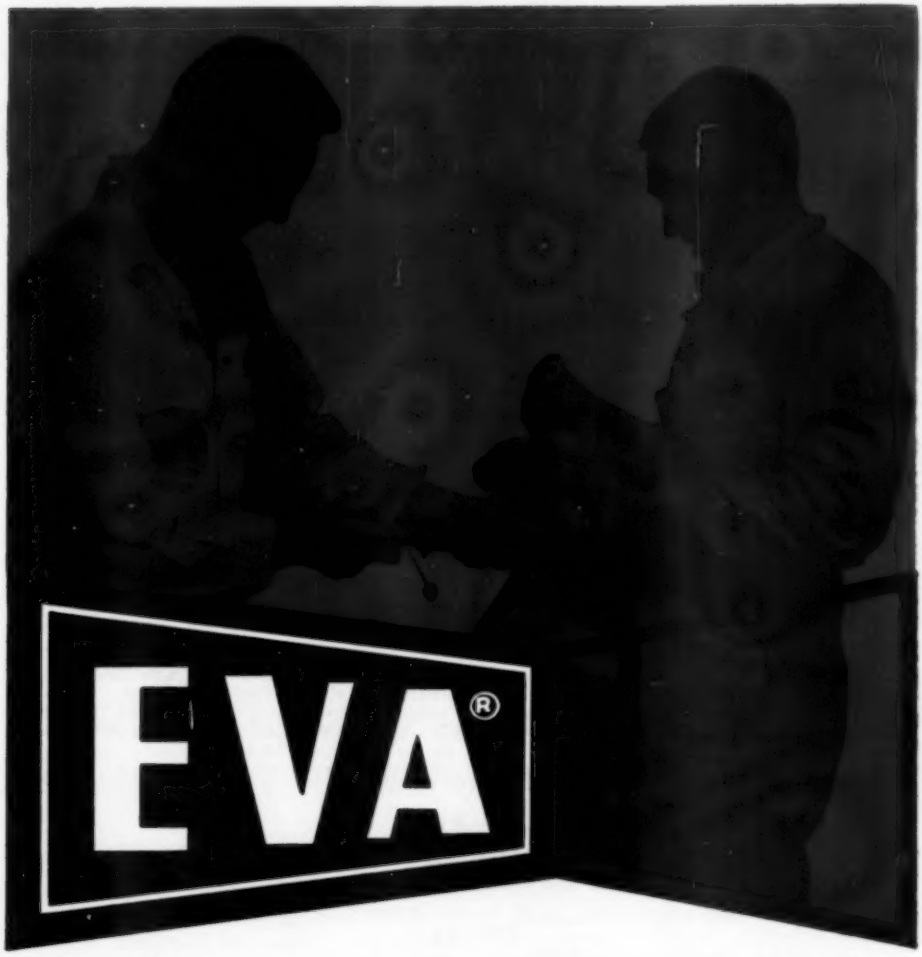
Now you can offer continuing protection against three common swine worms by dispensing Hymix to your hog-raiser clients. Hymix contains hygromycin B, the new antibiotic vermifuge which limits worm egg production and kills the worms themselves. Given to pigs in a complete starter feed from the time they begin to eat, Hymix can keep these pigs free of ascarids, nodular worms, and whipworms. The advantages of decreased tissue damage and improved disease control are readily apparent. Consider also the plus factors of increased rate of gain and improved feed conversion. Hymix formulations permit full use of economical farm-raised grains. You will be pleased with the efficiency of this new step in the science of preventive medicine; your clients will appreciate its ease of use and its substantial economic return. Ask for Hymix, the vermifuge with added B_{12} and antibiotic activity, in $2\frac{1}{2}$ lb. packages, packed 12 to a carton.

COMPARISON OF WORM-CONTROL METHODS

	Kinds of worms affected	Eliminates the production of worm eggs	Gives effective, continuous protection	Safe and useful to feed on continuous basis	Protects pigs throughout critical period
'HYMIX'	Lg. Roundworms Nodular Worms Whipworms	YES	YES	YES	YES
SODIUM FLUORIDE	Lg. Roundworms	NO	NO	NO	NO
CADMIUM COMPOUNDS	Lg. Roundworms	NO	NO	NO	NO
PIPERAZINE COMPOUNDS	Lg. Roundworms Nodular Worms (Partial)	NO	NO	NO	NO

CSL

CORN STATES LABORATORIES, INC., 1124 HARNEY ST., OMAHA, NEBRASKA



Erysipelas vaccine live culture, avirulent

Supplied In:

EA 5—2 doses
EV 5 doses
EVLC 25 doses
EVL 50 doses

each vial with sterile diluent

EVA provides safe, effective immunization of swine against erysipelas.

Live culture EVA produces rapid, high antigenic response for long, strong immunity. Avirulent EVA is completely safe—cannot cause infection.

Evaluation of EVA in 3 million swine during two years of field use attests to its effectiveness as an immunizing agent.

EVA is a product of Norden Research. Patent pending U.S. and Canada.

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Journal of the American Veterinary Medical Association

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SURGERY AND OBSTETRICS

CLINICAL DATA

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THE NEWS

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NOW... A

"tamed iodine"*

FOR HARD-TO-MANAGE SKIN CONDITIONS

Weladol†

(Polyalkyleneglycol Iodine Complex)

CREME AND SHAMPOO

gives you iodine's potent fungicidal and bactericidal action

. . . *without* iodine's characteristic toxicity, irritation or stain

Weladol . . . 6 years in the laboratories . . . 3 years in clinical evaluation . . . has been used successfully and safely in a wide range of hard-to-manage skin conditions of dogs, cats, horses and other species of large and small animals.

†U. S. Patent No. 2,759,869 *Trademark

Write for summary of clinical reports on **"Tamed Iodine" in Veterinary Medicine.**

Weladol Shampoo in 4 fluid ounce plastic bottles and 1 quart glass bottles
Weladol Creme in 1 ounce and 1 pound jars

PITMAN-MOORE COMPANY DIVISION OF
ALLIED LABORATORIES, INC.
Indianapolis 6, Indiana

Correspondence

January 22, 1958

Dear Dr. Aitken:

I write in response to your recent letter.

Our investigation of Asian flu in swine consists mainly of a serological survey of swine for evidence of past Asian flu infection. Depending on circumstances of the individual "case," some animals will be subjected to virological examinations as well. The serum specimens will be tested for both Asian and hog flu by complement-fixation and hemagglutination-inhibition tests.

We plan to collect two blood samples from each hog included in the survey (approximately 200 swine representing 20 herds). For purposes of discussion, we can refer to these samples as the "pre-exposure" and "postexposure" specimens. The "pre-exposure" samples were collected in October and early November of 1957, a time sufficiently early to minimize the possibility of the hog's having been exposed to Asian flu by contact with infected human beings or other animals. The "post-exposure" samples will be collected in the near future, at a time estimated to insure their having had maximum opportunity for exposure. The paired serum specimens from each hog will then be tested in an effort to demonstrate their rise in titer specific for Asian flu.

Depending on the results of the serological tests, we will attempt to demonstrate that the human contacts of the "postexposure" positive hogs have had influenza. On the other hand, if the "pre-exposure" swine specimens, as well as the "post-exposure" samples, are found to be Asian flu-positive, we will then have to conclude we collected our "pre-exposure" samples too late. In short, it is at this time impossible to foretell exactly what direction this study may take.

In large part, the key to future activity in this area lies in the evaluation and interpretation of this serological test. Obviously, a single small investigation such as ours will not suffice to answer the many questions about Asian flu and its transmissibility between man and swine. However, our investigation is only one of many such projects being conducted in various parts of the world. The veterinary section of the Communicable Disease Center, U.S. Public Health Service, served to stimulate most of the swine Asian flu surveys being carried out in this country. When the results of all the individual investigations are reported to the Communicable Disease Center, an attempt will then be made to correlate such factors as human epidemic patterns, swine epizootic patterns, serological results, dates of human or animal infections, etc. In other words, the entire matter will then be evaluated epidemiologically as well as epizootiologically.

In closing, let me say that our project is being carried out in cooperation with the practicing veterinarians in this area. Needless to say, without their assistance and support this study would not be possible.

I hope this information is of some value to you.

Sincerely yours,
s/R. A. Tjalma, D.V.M.
Iowa City, Iowa

[This investigation is being made in the area around Iowa City, Iowa, where Drs. Shope and Crow made their historical studies of swine influenza.—Ed.]

CONTENTS—Continued

MISCELLANEOUS

ORGANIZATION SECTION

Gallogen®

SAFE

INJECTABLE LAXATIVE

Gallogen* acts promptly and directly on the hepatic cells to stimulate production of true whole bile. It has a secondary action stimulating emptying of gall bladder.

Gallogen* is safe to use in the recommended doses; no toxic effects have been noted.

Supplied: 30-cc. multidose vials, each cc. containing 50 mg. of Gallogen.*

Dosage: Intramuscular or intravenous administration. Cattle—500 mg. (10 cc.) Sheep and Swine—200 mg. (4 cc.) Dogs and Cats—50 mg. to 100 mg. (1 cc. to 2 cc.)

(*Diethanolamine salt of paratolylmethylcarbinol camphoric acid ester.)

VETERINARY DIVISION
THE S. E. MASSENGILL COMPANY
BRISTOL, TENNESSEE

New! BACTERICIDAL-FUNGICIDAL TRIOCIL SPRAY!

CLINICAL USE SHOWS RAPID HEALING OF:

- dermatoses
  ringworm, fungus infections, eczema, hot spots, acute erythematous and moist dermatitis
- otitis externa
- minor cuts and wounds
- paronychia
- pyogenic infections

No resistant organisms have been reported.

USE TRIOCIL SPRAY TWO WAYS! FOR DROPS . . . FOR SPRAY!

Turn outlet down to dispense drops.

Hold bottle upright and squeeze to spray.

Now your Triocil treatment for dogs, cats and large animals can be faster and easier than ever! Triocil Spray is now available . . . with a penetrating alcohol-acetone base . . . conveniently packaged in a 50 ml. squeeze bottle. Also in ointment and solution (shampoo-like detergent base).

Triocil Spray is effective against practically all organisms that cause or complicate skin infections. And you will find Triocil Spray invaluable for pre-surgical preparation. Because Triocil has high tissue affinity, it resists licking and rubbing off—leaves a faint, identifying pink color on the skin. Pleasantly scented!

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Sold only through veterinary distributors

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NOW–an instant dry dog food that cuts mixing time in half!

The instant you add water, new QUICK KEN-L-MEAL turns into a crumbly-moist hamburger-like mix that smells meaty, tastes meaty, and nourishes better than meat alone!

ORDINARY MEAL. *As liquid is added, it forms unabsorbed "puddles" on surface.*

QUICK KEN-L-MEAL. *Liquid is absorbed almost instantly as added; no wasted time!*

This is the new meal discovery that has *everything* professionals have wanted for years!

Saves time—cuts mixing time in half. Then it *stays* crumbly-moist—won't pack down or cake in the feeding dish. So it saves clean-up time, too!

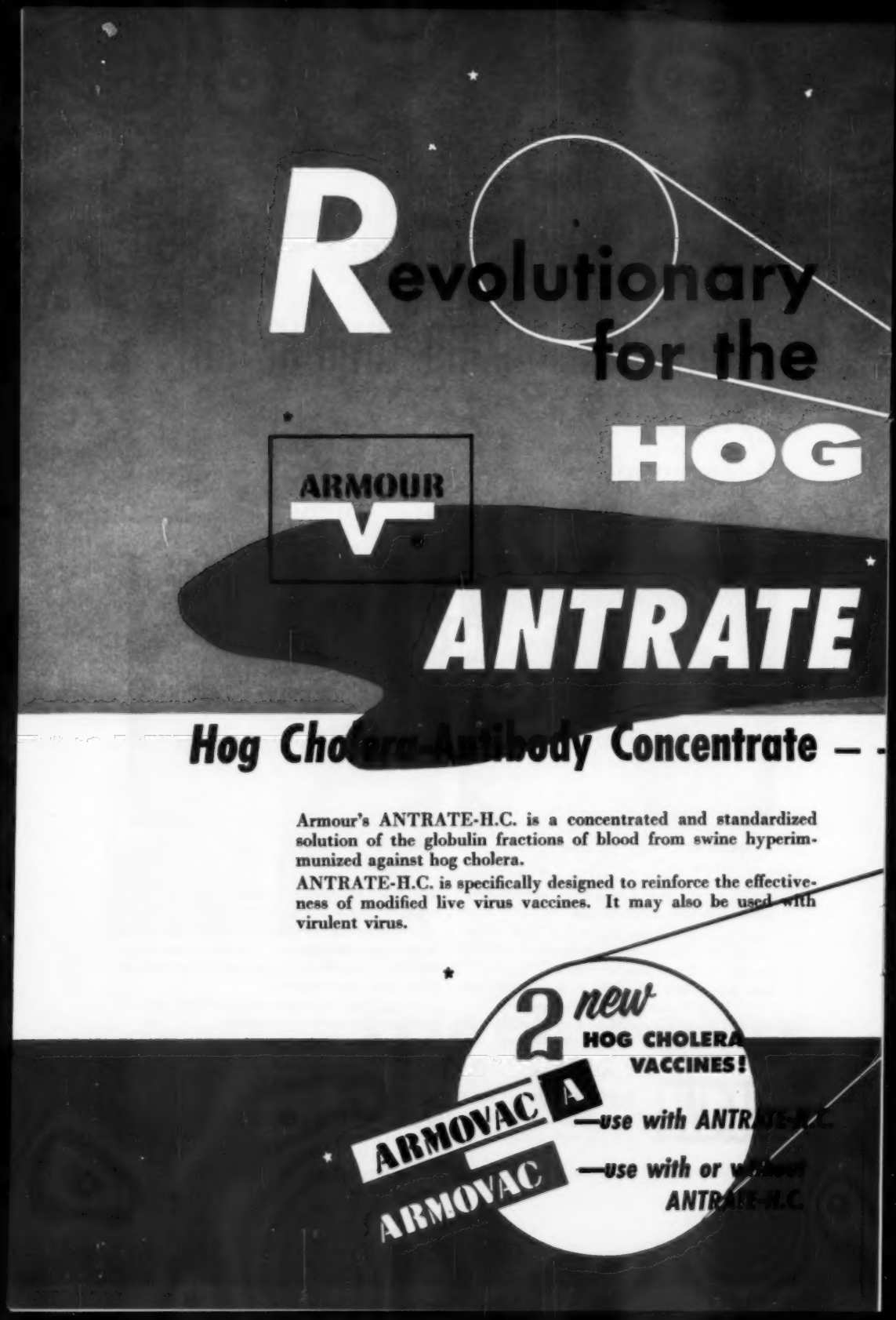
Dogs love it—they can't resist its meaty aroma and flavor. That's because it's rich in *real meat meal.*

Nourishes completely. Actually gives your dog *more* nourishment than fresh lean meat alone. Made from real meat meal, and other valuable ingredients—contains all the nutrients dogs are known to need.

Pasteurized for digestibility . . . and homogenized so that *every* golden-brown nugget tastes so good even a finicky eater cleans the bowl.

In convenient, economical 25- and 50-lb. bags at food, feed, and pet stores everywhere.

NEW! **Sends out strong "meat signals" dogs can't resist—*the instant you add water!***

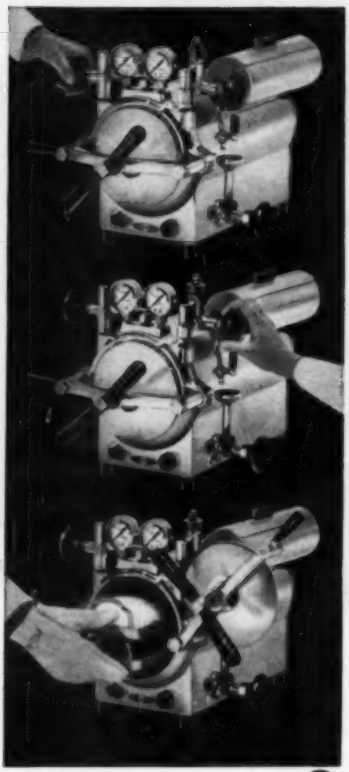

Revolutionary for the HOG
ARMOUR
ANTRATE
Hog Cholera Antibody Concentrate —
Armour's ANTRATE-H.C. is a concentrated and standardized solution of the globulin fractions of blood from swine hyperimmunized against hog cholera.
ANTRATE-H.C. is specifically designed to reinforce the effectiveness of modified live virus vaccines. It may also be used with virulent virus.
2 new
HOG CHOLERA
VACCINES!
ARMOVAC A
—use with ANTRATE-H.C.
ARMOVAC
—use with or without
ANTRATE-H.C.

WHY BOIL?

when you can sterilize FASTER and SAFER in the

PELTON AUTOCLAVE

So Easily Operated



TRANSFER
After loading, simply transfer steam from reserve to sterilizing chamber. In only a few seconds, temperature is attained.

DISCHARGE
When sterilization is completed, discharge steam to condenser after closing transfer valve and crack open the door.

UNLOAD
In a minute or two entire contents are removed completely sterile and dry. The autoclave is ready for second load.

AVAILABLE IN 3 SIZES:

Model FL-2,
6" x 12" sterilizing chamber
•
Model HP-2,
8" x 16" sterilizing chamber
•
Model LV-2,
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See your dealer or send coupon.

the Pelton & Crane company
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Gentlemen: I am interested in the Pelton time-saving Autoclave. Please send me more information and prices on model.

☐ FL-2 ☐ HP-2 ☐ LV-2

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Millions of successfully vaccinated dogs have proved the IMMUNIZING efficacy of

DISTEMPEROID VIRUS

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FROMM
Laboratories, Inc.
Grafton, Wisconsin, U.S.A.

AVMA Report

Ethics—An Integral Part of Internal Public Relations

F. R. Booth, D.V.M., Practitioner
Elkhart, Ind.

Presented at the AVMA Public Relations Conference, Cleveland, August 18, 1957

Public relations comprises the various connections in which people are brought together by common interests. We are here because of a common interest—to examine our relations not only with the general public but also between ourselves. Good public r e l a t i o n s, internal or external, means simply that we refrain from doing those things to the public which we might be inclined to do to our relations.

Internal public relations might also be called ethical behavior. As professional men obligated by a self-adopted code of behavior, we still see too many instances where members' actions are those ordinarily reserved for our poorest relations. Too often we stoop to honor these colleagues with faint praise, or we do not speak in their defense, or for them. At times, it would require only a sincere word, which would spell the difference between our being big men or little men.

Good Relations within Profession Is Important

Public relations is not just a matter of how we face the public and what we do for their benefit, or how we may influence their thinking. But we, too, are a part of the public, and the face we present to each other and for each other is just as important as is our attitude in the presence of our most influential client.

Many times a client comes into the office and asks if I know Dr. So-and-So on the other side of town. There is one simple answer: "Why, of course, I know him. He is one of my best friends." With that statement, we have evaded what otherwise could become an embarrassing situation. From that point on, instead of hearing the history and reputation of Dr. So-and-So, we get the history of the patient. Truth suddenly becomes important to that client, for he recognizes that professional integrity does exist, and that we are going to maintain it in our offices.

You may also hear someone say, "I couldn't call my neighbor a friend. My so-called neighbor and colleague cuts my throat at every chance he gets, and I am not about to be charitable." Fights, whether they be verbal or physical, never stop as long as the fists are flying. If we can just have the inclination to start pulling our punches, then we may begin to create respect, and respect creates friendship. Someone once said that if we persist in throwing dirt, then we must expect to lose ground.

All too often the Committee on Ethics is presented with some evidence about transgressions of a member. Some of these are simple; some are more serious; and some are absurd, in that they represent a biased and unfriendly opinion. In some instances, there is even the implication that the AVMA has the power and the obligation to put someone out of practice. Personal animosities underscore every word of these letters. As far as the committee is concerned, we can only visualize heart attacks all over the country.

Local, personal, and individual differences should never reach any committee on the national level. These should be settled at the local level and, preferably, if you please, in the best eating place in town. We know that sometimes a good steak can be the best internal public relations of all.

Nothing pleases me more than to dine with my fellow veterinarians at a favorite place in our own home town. Quite often some wag of common acquaintance stops by our table and makes the observation, "'Well, you must be planning on raising your fees." He thinks he has made a good joke, and we all have a lot of fun over it. But back of it, that person quickly realizes that in the future he has little chance of playing one of us against the other—ethical, good internal public relations right out in public view.

I am reminded of an occasion when ten veterinarians and their wives decided to have dinner together at a fashionable restaurant in a particular town. It was not a special occasion; it was just a friendly get-together. At an adjoining table, there was

Let's call a Spade a Spade

Some problems will solve themselves—on a "Don't look, maybe it will go away" sort of basis. Others can be swept under the rug.

Unfortunately, the indiscriminate use of veterinary biologics by untrained persons doesn't fall in either of these categories. It is definitely on the increase, as more and more suppliers are selling through non-professional outlets.

We see this as a detriment to the livestock industry and to your chosen profession. Since we sell only to the graduate veterinarian, we believe your position in this matter is the same as ours.

There is no place in livestock disease control for double talk. It's time to call a spade a spade. Frankly speaking, it's pretty much up to all of us as to what—if anything—can be done about this problem.

Muscles that aren't used atrophy; those that are used increase in size and tone. It is the same way with suppliers of veterinary products . . . and your orders are the only way we have of knowing which side of this issue you're on.

So the next time you place an order, ask yourself this question: "Could this order help or hurt the future of my profession?"

AFFILIATED LABORATORIES CORPORATION

Grain Belt Supply Co.
Corn Belt Laboratories, Inc.
The National Laboratories Corp.
The Gregory Laboratory, Inc.

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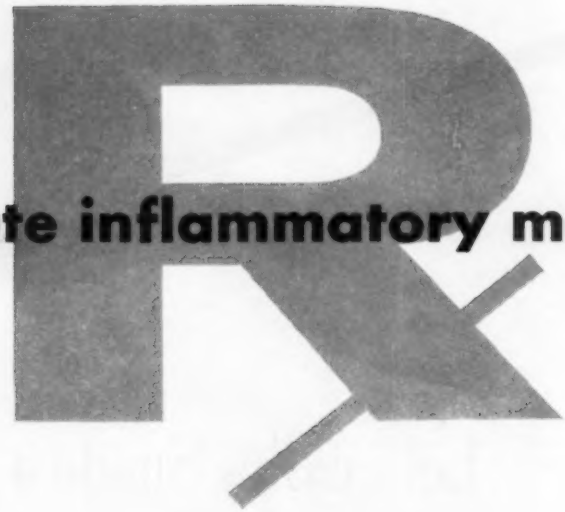
Produced for and sold to Graduate Veterinarians only



in acute inflammatory mastitis

℞ Soxipent

with the antiinflammatory agent, hydrocortisone

Each cc. contains:

Hydrocortisone Acetate	2 mg.
Procaine Penicillin G	10,000 units
Erythromycin	5 mg.
Neomycin (as sulfate)	5 mg.
Dihydrostreptomycin (as sulfate)	25 mg.
Sulfisoxazole	75 mg.
Cobalt Sulfate	0.5 mg.

Now, as a companion to regular Soxipent, Fort Dodge offers new Rx Soxipent—an exclusive formula for professional use. Specifically indicated where quarters are highly inflamed, swollen, and engorged . . . when used early, gangrenous mastitis cases may be prevented. *In 100 cc. vials, 12 cc. syringes, and 10 cc. tubes.*

Now **2** *formulas:*

℞ Soxipent
and
Soxipent

FORT DODGE

Fort Dodge Laboratories, Inc.
Fort Dodge, Iowa

a lady of average intelligence who began naming all of the veterinarians at that table for the benefit of her friends. Suddenly she was terribly embarrassed for it dawned upon her that she had taken the same dog to the offices of every one of the veterinarians sitting at that table. The doctors were not embarrassed because they were enjoying good internal public relations, as well as improving external public relations.

Medical Advances Make Consultation a Necessity

There is another facet of ethical public relations, internal and external, about which we have been lax without justification. This is the matter of indifference to professional consultation with other practitioners, men of research, extension and federal veterinarians, or anyone within the profession, who may be able to be of assistance to us in any given circumstance. The time has long since passed when we, as veterinarians, can practice veterinary medicine as isolated and independent entities. Medical advance is so great and so rapid that we can not expect to be self-sufficient and have the answers for the handling of every disease problem.

Here is a field where the public immediately recognizes a professional attitude. If we evidence a willingness to provide this added assistance, whether consultation is used or not, the client understands that we are trying to do everything within our power for his benefit. Even if we lose that animal, the fact that our sole interest has been for him and his patient creates good external public relations.

The Ethics Committee Is the Conscience of the AVMA

Most of the work of your ethics committee deals with internal public relations. In a sense, the committee serves as the conscience of the Association. Serving as the conscience for the profession, we can not keep you from doing wrong, but we may keep you from enjoying it.

It has been the intention of every member who ever served on the committee that we should not be content merely with settling disputes among our members, but that we should also bend our efforts toward the avoidance of mistakes by advance education. The Code is well written; it is explicit in its recommendations and it does not penalize the honest veterinarian. Interpretation of its principles may rest with the committee, but the committee can not write in special provisions to suit you as an individual.

The Code is the ten commandments of our internal public relations. We may disagree with certain of its contents; we may think it is outdated or too long. But I challenge any one of you to write a new and a short and an up-to-date one which leaves no guesswork. I have tried it, and I found it to be a most discouraging assignment.

Occasionally, a nonmember is heard to remark, "Why should I belong to the AVMA, it never did anything for me?" In that one remark is embodied the ignorance of a lifetime, because the AVMA has put countless dollars into every veterinarian's pocket, and it has given him public prestige besides. How could anyone possibly assume that ten officers of this Association, 12 Board members, and 37 committees, with over 200 members active on these committees, have done nothing for the individual AVMA member? In the field of public relations alone, the entire effort has been justified.

External Public Relations Can Not Be Separated from Internal Public Relations

It is not for me to discuss external public relations, but I do not see that it can be separated from the internal aspect. Our AVMA public relations department presents the best, the ideal, the ethical, and we are pressed to render a better and more adequate service. We are challenged to keep up with progress and put our best public relations foot forward.

The various articles that appear in magazines, that come from the Public Relations Department, are being done for your sole benefit. We must remember, however, that we can not necessarily buy good will. One man among us can tear down the entire effort that any of us might attempt to build up in any given community.

I want to call your attention to an example of what we, as individuals, can do for the benefit of all of us. Here we have a Sunday magazine article. This was developed by a practitioner. Here is an ethical story of the profession. It uses pictures to illustrate but in no way does it identify an individual or a hospital. It boosts only one thing, the local association and, when it does that, it boosts every

(Continued on adv. p. 28)

equipment news

for the practicing veterinarian

NICHOLSON

NEW! the improved Frank's Fetal Extractor

Nicholson now brings you the improved Frank's Fetal Extractor. Proved in thousands of cases, this instrument deftly assists with an infinite amount of pull on the newborn. Makes difficult OB cases almost simple. Assembles in a minute, completely portable. Write for folder N-F.

NEW! Copon kennel paint refinishes rusty kennels

This new special plastic paint was developed for refinishing metal kennels. Gives hard, baked-enamel-like surface without baking. Makes your old rusty kennels like new. Works wonders on wood and concrete too. Can be brushed, rolled, or sprayed. Choice of colors. Write for folder N-C.

NEW! clear plastic cases for your glass syringes

Keep syringes sterile, clean in these light unbreakable plastic cases. Covers for 5, 10 and 20 cc. syringes.

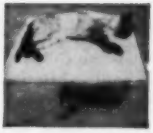
NEW! plastic sign letters for your office

Our new selection of beautiful weatherproof plastic signs will dress-up your office or clinic. All sizes, colors; easily installed. Write for folder N-5. We ship them ready to install with simple tools.

NEW! do-it-yourself Plasti-Plated cages

Before you buy cages, write for folder N-2 on our amazing new Plasti-Plated kennels. Rock-hard, glass-smooth, seamless surfaces. Inexpensive, easy to do-it-yourself! We supply materials and complete instructions. Will furnish complete kennels if you prefer.

NEW! radiant heated warming panel



This electrically operated radiant heat panel eliminates messy boxes and blankets, hot pads, etc., when keeping weanlings warm, treating patients in shock. Heavily Plasti-Plated to resist stains, urine, etc. Shock-proof. 2 convenient sizes. Uses 110 v. current. Write for folder N-R.

durable, metal sheathed instrument/serum cases

Baked black enamel over steel with brass trim. 5 standard models; light weight yet built to take knocks! See folder N-1 for sizes, prices. Most are in stock, ready to ship.

hi-current electric firing iron

Most modern, up-to-date way to fire horses, remove warty growths, ear polypi, tumors. Complete with 11 points/tips. Operates on 110 v. barn current. A superb instrument for horse practice. Write for folder N-6.

electric "B" dairy cow branding iron

Heats in 90 seconds, makes a clean brand, weighs only 11 ounces. T and V brands available too. Uses 110 v. current, won't smoke. Write for folder N-3.

Please send me the folders I've checked below.

- ☐ folder N-1 cases
- ☐ folder N-2 Plasti-Plate
- ☐ folder N-3 "B" irons
- ☐ folder N-4 syringe cases
- ☐ folder N-5 sign letters
- ☐ folder N-6 firing irons
- ☐ folder N-F extractor
- ☐ folder N-R radiant panel
- ☐ folder N-C COPON paint

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city

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3990 Ulster Street Denver

clip and mail today

presenting

METIBIOTIC

Mastitis Infusion Veterinary

NOW 3

convenient

dosage forms

for greater ease

of application

. . . bringing new certainty

chronic mastitis **METIB**

. . . with these advanta

NEW
10 cc. plastic syringe

NEW
100 cc. multiple-dose vial

ALSO
7.5 cc. tube

Schering

PROMPTLY CHECKS INFLAM
The greater potency of METICORTEN (hydrocortisone) assures prompt reduct suppressing inflammation, the steroid penetration of the antibiotics—even to

QUICKLY ERADICATES INFEC
The penicillin-streptomycin combinati peutic effect against both gram-positiv commonly associated with bovine mas penicillin and streptomycin remain for maximum antibacterial activity. Effec persist for 60 to 72 hours.

MARKEDLY DECREASES UDD
Early dissolution of the inflammatory of infecting organisms combine to help and minimize permanent udder damag

RAPIDLY RESTORES FULL LA
METIBIOTIC clears sensitive tissues ability to secrete milk. Normal milk p 24 to 36 hours following the infusion. rapid than conventional antibiotic the

SINGLE-DOSE ECONOMY
Complete recovery usually follows sing dispersion of METIBIOTIC upward t almost immediate reduction of swelling return of appetite and normal milk pro

DOSAGE
The usual dosage is *one 7.5 cc. tube* or *one* quarter. When using the 100 cc. multiple- each quarter. Approved techniques for ud to injection of METIBIOTIC. If retreatm

nty to the treatment of acute and

BIOTIC

METICORTEN acetate
plus
Penicillin
plus
Dihydrostreptomycin

ntages

AMMATION

TEN (up to five times that of cortisone or eduction of swelling and edema. By roid facilitates rapid and more efficient en to previously inaccessible foci of infection.

FECTION

ination affords maximum chemothera- positive and gram-negative organisms most mastitis. High concentrations of n for 24 hours after instillation for Effective concentrations of penicillin

UDDER DAMAGE

tory process and complete eradication help prevent formation of scar tissue amage.

LACTATION

sues of infection and preserves their lk production usually is restored within on. Thus the process of recovery is more therapy.

single infusion. The widespread rd throughout the inflamed udder insures elling, early eradication of infection, k production.

r *one 10 cc. syringe* infused into each infected tiple-dose vial, 10 cc. should be used for or udder infusion should be observed prior reatment is necessary, repeat after 48 hours.

PACKAGING

Each 7.5 cc. tube *or* 10 cc. syringe of METIBIOTIC Mastitis Infusion contains 4 mg. prednisone acetate, 300 mg. dihydrostreptomycin (as the sulfate) and 100,000 units procaine penicillin G in a special nonirritating oleaginous dispensing vehicle. The 7.5 cc. tube is packaged in boxes of 12, 72 and 144; the 10 cc. plastic syringe in boxes of 12, 144 and 720. The 100 cc. multiple-dose vial, each 10 cc. containing 4 mg. prednisone acetate, 300 mg. dihydrostreptomycin and 100,000 units procaine penicillin G, is supplied in boxes of 1, 6 and 36.

FORECAST: STORM WARNING

time for **METICILLIN**

(METICORTEN allied with penicillin)

to provide assured symptomatic relief in a widening variety of seasonal ailments by—

- shortening recovery time
- helping restore metabolic balance
- relieving stress
- checking infections
- improving appetite
- minimizing incidence of secondary infections

Indicated whenever stress is a complicating factor as in—

Pulmonary conditions
Foot rot in dairy cattle
Accident cases
Surgery in large and small animals

Packaging: METICILLIN Aqueous Suspension Veterinary, 10 cc.vial, 10 mg. prednisone and 300,000 units procaine penicillin G in each cc., boxes of 1, 6 and 72.

METICORTEN® Acetate, brand of prednisone acetate.
METIBIOTIC,® brand of procaine penicillin-dihydrostreptomycin in oil with prednisone acetate.
METICILLIN,® brand of procaine penicillin for aqueous injection with prednisone.

Schering

SCHERING CORPORATION • BLOOMFIELD, NEW JERSEY

®T.M. V-MB-J-58

DEPENDABLE, NON-GRIPING—

PURGATIVE

FOR ALL
DOMESTIC ANIMALS

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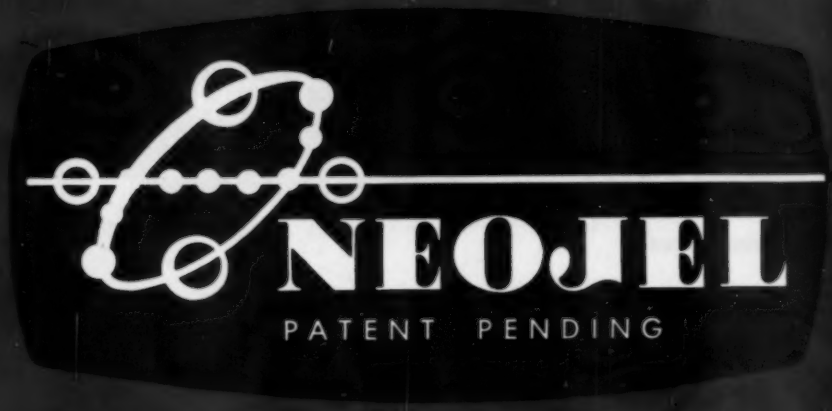

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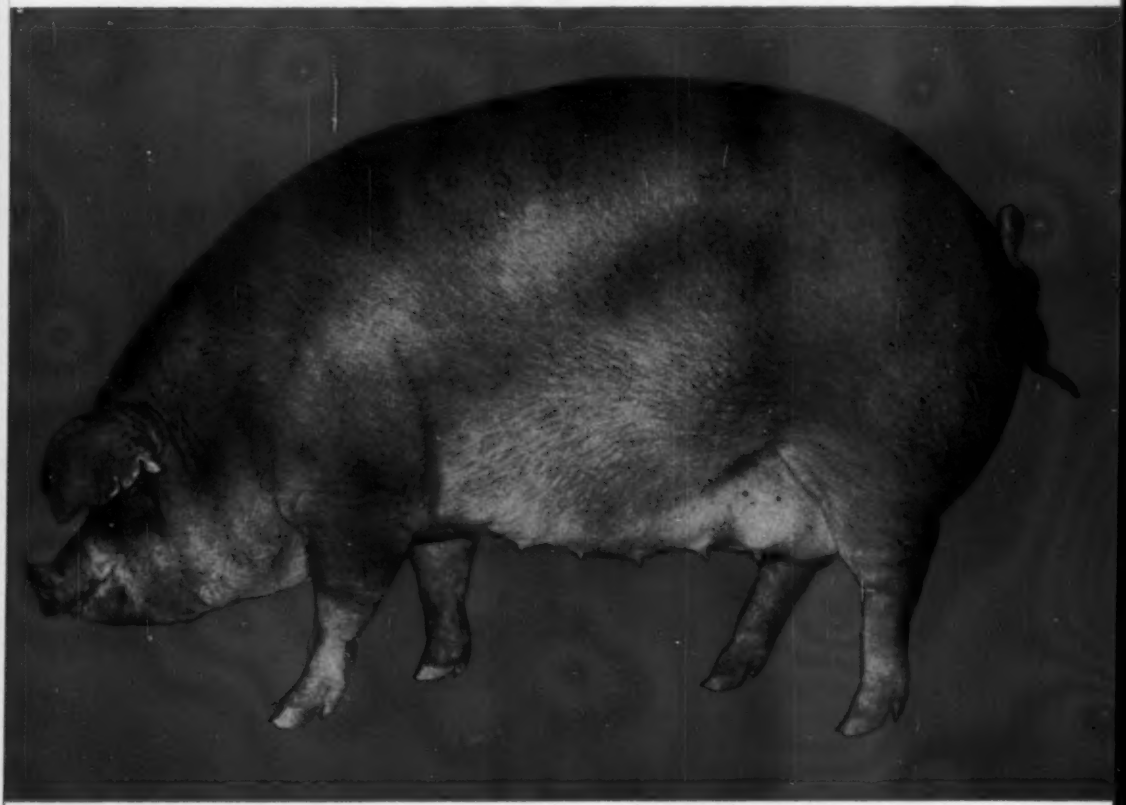

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Studies on Pneumonia of Cattle. II. An Enzootic Pneumonia of Calves in Canada

G. R. CARTER, D.V.Sc., and H. C. ROWSELL, D.V.M., Ph.D.
Guelph, Ontario

OBSERVATIONS MADE during a study[2] of the pneumonia seen in cattle with shipping fever suggested that many of the most seriously affected animals had a chronic pneumonia prior to shipment. It was also noticed that a severe pulmonary infection could be produced in some calves with *Pasteurella hemolytica*.[3] Postmortem examination of the severely affected calves indicated that they had a low-grade chronic pneumonia prior to exposure to *Past. hemolytica*. These observations suggested the occurrence, in the normal cattle population, of an enzootic pneumonia of a chronic character.

It has been shown in recent years that virus pneumonia of pigs (VPP), a relatively low-grade pneumonia, is widespread in the principal swine-raising areas of the world. The majority of Pasteurella infections involving the lungs of swine are now believed to be secondary to the virus of VPP.

An atypical pneumonia of calves in Great Britain has been described.[6] This disease, characterized pathologically by a peribronchiolar lymphoid hyperplasia, was seen in calves of a few weeks to a year of age. In fully susceptible herds, even adult cattle were affected. The incubation period was approximately 14 days. The pneumonia seen in calves dying outdoors was complicated by parasitic bronchitis.

From the description of "cuffing pneumonia," as it was named,[6] one is struck by the clinical, bacteriological, and pathological similarity of this disease to virus pneumonia of pigs.

Recently, the histopathological changes of cuffing pneumonia of calves was described in detail.[4] In a subsequent study,[5] the pneumonias of calves were classified from a pathological standpoint. The widespread pneumonia of cattle described in this paper resembles cuffing pneumonia. It would appear to be a different disease than the pneumonia described by others.[1,7]

MATERIALS AND METHODS

Calf Lungs.—Lungs were obtained from a local abattoir, on the day of slaughter, from veal calves 3 to 4 months old. These calves were raised on farms in the vicinity of the Ontario Veterinary College. It could be presumed that they would be representative of the general calf population in southern Ontario.

Pathological Findings.—The fresh lungs were examined for evidence of gross pathological changes. The amount of pneumonia was recorded on an outline drawing of bovine lungs to indicate its extent. Sections were taken from various parts of the affected lungs and placed in 10 per cent formol-saline solution. The sections were stained with hematoxylin and eosin.

Examinations for Bacteria and PPLO.—The medium employed for the isolation of bacteria was agar containing 7 per cent, by volume, of sheeps' blood; for PPLO, the medium was beef heart infusion agar to which was added, by volume, 20 per cent horse serum and 10 per cent fresh yeast extract.

RESULTS

Of the 124 sets of lungs examined, 31 (25%) had some pneumonia; the amount

From the Department of Research, Ontario Veterinary College, Guelph, Ont.
This project was aided by a grant from the Lederle Laboratories Division, American Cyanamid Co., Pearl River, N.Y.

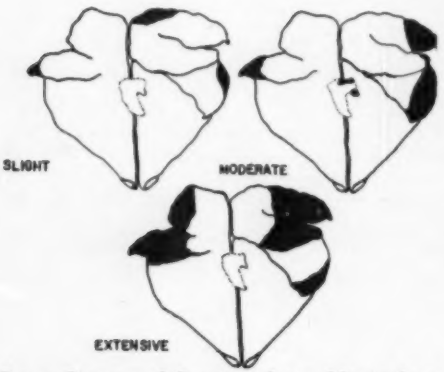

Fig. 1—Diagrams of three typical sets of bovine lungs showing the extent of pneumonia lesions in each category.

varied greatly. For descriptive purposes, the affected lungs were placed in the categories of slight, moderate, and extensive depending upon the extent of the lesions (fig. 1). The areas shaded indicate the locations most frequently affected. There were 13 in the slight group, 12 in the moderate group, and 6 in the extensive category.

In only 2 calves were the diaphragmatic lobes involved. Extensive pleuritic adhesions were seen in 4 calves. The right apical lobe was most frequently affected, while the left apical and intermediate lobes were the least frequently affected of the anterior lobes. The remaining anterior lobes were affected with roughly the same frequency.

Pasteurella multocida was recovered from 12 of the 31 pneumonic lungs. Neither PPLO nor strains of *Past. hemolytica* were recovered. Other species of bacteria were not recovered in numbers large enough to be considered significant.

The diseased lungs were not classified according to gross changes other than the extent of involvement. The lesions infected with *Past. multocida* gave evidence of a severe reaction characterized by swelling and exudation as opposed to the less severely inflamed nonbacterial lesions.

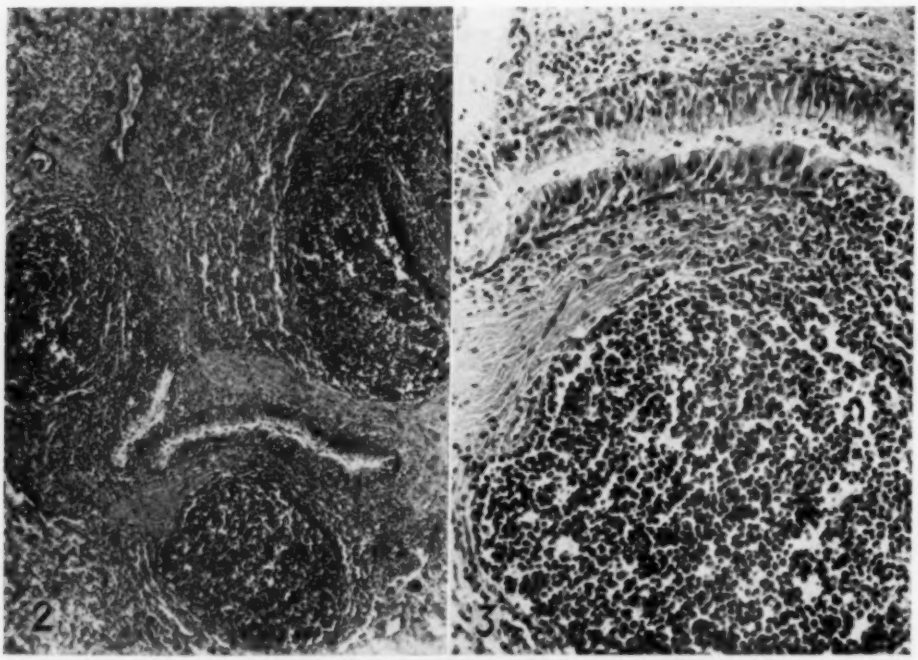

Fig. 2—Bronchioles surrounded by lymphoid nodules in the lung of a calf; Pasteurella were not isolated. H & E stain; x 40.

Fig. 3—Invasion of muscular layer of bronchiole by lymphocytes in calf lung; Pasteurella were not isolated; H & E stain; x 100.

Fig. 4—Longitudinal section of bronchiole in calf lung, showing cuffing by lymphoid nodules and purulent exudate in lumen. Pasteurella multocida were isolated. H & E stain; x 40.

The majority of the affected lungs displayed the principal changes described for cuffing pneumonia.[4] However, the inclusion body pneumonia and interstitial pneumonia described were not observed.

From a histopathological standpoint, the lesions could be divided into two major groups depending upon the presence or absence of *Past. multocida*. The most characteristic change seen in the microscopic sections of lungs from which *Past. multocida* was not isolated was the peribronchiolar hyperplasia of lymphoid tissue. This tissue contained structural elements resembling lymph nodes. The lymphocytes infiltrated the muscular layer of the bronchioles and, in some cases, this infiltration was sufficient to produce stenosis. The epithelium of the bronchioles showed excessive goblet cell formation. Exudate was absent in the majority of bronchioles; however, a few contained polymorphonuclear neutrophils, mucus, and cellular debris. The alveoli were either collapsed or they contained macrophages or, occasionally, small giant cells. Alveolar epithelialization was scattered throughout the section (fig. 2, 3).

The sections from the lungs yielding *Past. multocida* regularly showed bronchioles plugged with polymorphonuclear leukocytes, fibrin, and cellular debris (fig. 4, 5). The peribronchiolar cuffing by lymphocytic nodules was present but to a lesser extent. The alveoli contained polymorphonuclear neutrophils and fibrin, evidence of acute exudative changes.

DISCUSSION

This study has shown that a chronic low-grade pneumonia is prevalent in the normal cattle population in southern Ontario. In all likelihood, this pneumonia is prevalent

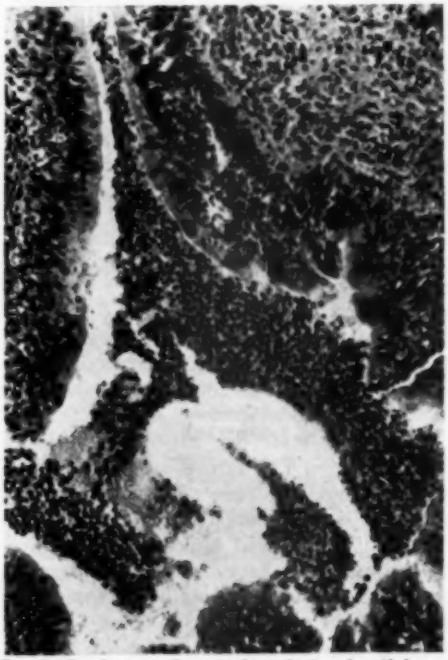

Fig. 5—Purulent exudate in bronchiole of calf lung. Pasteurella multocida were isolated. H & E stain; x 100.

in the principal cattle-raising areas of the world. This is not surprising when we consider the extent of a similar type of pneumonia in swine and the prevalence of low-grade pneumonias in other species, e.g., mice, rats, and guinea pigs.

The majority of the lungs examined were taken from calves raised in the winter and spring. Observations made at various abattoirs at different seasons suggest that enzootic pneumonia is less extensive in calves born in the summer. Like VPP, enzootic pneumonia is not as prevalent in adult as in young animals.

It is of interest that *Past. multocida* was the only bacterium recovered in significant numbers. *Pasteurella hemolytica* appears to be most frequently associated with more acute respiratory disease in central Canada.

It has frequently been stated that *Past. multocida* can be isolated from the normal bovine lung. This is correct if we appreciate that the normal bovine lung is frequently pneumonic. However, a distinction should be made between normal lungs and healthy lungs. It is the authors' contention that *Past. multocida* is not recovered in any numbers from the healthy lung.

Like VPP in swine, enzootic pneumonia no doubt retards growth and lowers vitality. However, it is likely that its greatest importance lies in its acting as a portal of entry for secondary bacteria, particularly *Past. multocida, Past. hemolytica,* and *Corynebacterium pyogenes.* No doubt many of the cattle that develop shipping fever are affected with enzootic pneumonia.

Successful transmission of this pneumonia to calves has been carried out with filtered and unfiltered material. They will be described in a later report. The experimental disease was mild and characterized mainly by pyrexia and coughing.

SUMMARY

Lungs from 124 normal veal calves were examined for evidence of pneumonia. Lesions of a pneumonia were found in 31 (25%). The affected lungs were classified according to the extent of the gross pneumonia. The histopathological changes observed were similar to those seen in the cuffing pneumonia described in Great Britain.[6] *Pasteurella multocida* was recovered from 12 of the 31 affected lungs.

Some of the implications of this widespread pneumonia are discussed.

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Avian Tuberculosis in a Cow.—At slaughter, a cow in Germany was found to have extensive lesions of avian tuberculosis of the stomach, colon, peritoneum, and liver—rare lesions in this infection. When tested with mammalian tuberculin, all animals in the herd were negative except 1 heifer which showed a questionable reaction.—*J. Schulze in Monatsh. f. Vet.-med. (May 1, 1957) :216.*

Swine Influenza Virus in Rats.—The virus of swine influenza was isolated from rats which lived in buildings, in Czechoslovakia, where swine with influenza were kept. The antigenic relationship of the isolated virus to that affecting the swine was proved serologically.—*Folia Vet. Facultat. Med. Vet. Cassoviensis, 1, (1957): 189.*

Asian Influenza Vaccination.—In the early 1940's, effective vaccines for influenza in man were developed. In 1947, these vaccines failed to protect against a new subgroup of influenza A viruses.

In 1957, another subgroup of influenza viruses, termed the "Asian strains," appeared. In a field test with new vaccines, started in July, 1957, among Army recruits at Fort Ord, Calif., four of every ten men were given the vaccine while six were given placebos. Due to the difficulty of identifying the virus, upper respiratory infections were not differentiated but, after

ten days, there were 43 per cent fewer cases of respiratory infection in the vaccinated than in the unvaccinated group. The estimate of its effectiveness is minimal.—*J.Am.M.A., 165, (Dec. 28, 1597): 2174.*

Asian Pasteurellosis in Cattle

With rinderpest under control, septicemic pasteurellosis (hemorrhagic septicemia) now is the chief killer of cattle and buffaloes in southern Asia. *Pasteurella multocida*, type I, is the only organism implicated (type IV infection also can cause a fatal septicemia but it is usually preceded by pneumonia). Type I is believed to be the equivalent of Carter's *Past. multocida*, type B (which was not reported from America; *Am. J. Vet. Res.*, April, 1957: 437).

The Asian disease usually appears when the animals are subjected to stress factors (exhaustion, onset of heavy rain season, etc.). The organism does not live in the soil; in Thailand, it could not be recovered from inoculated soil after 24 hours. However, there are animal carriers; in India, the organism was found in the tonsillar or nasopharyngeal region of 3 to 5 per cent of cattle and buffaloes. It is speculated that, under stress conditions, a carrier may develop the disease, then the organisms are discharged in its saliva and other animals are infected chiefly from contaminated drinking water. However, the organisms do not survive in the open more than 48 hours. If no carriers survived, the disease might disappear.

Although the disease is highly fatal (treatment is usually impractical) about 10 per cent of the animals seem to have acquired an active immunity. In one small experiment, the animals injected subcutaneously with about 20,000 virulent, type I, organisms all died of septicemia; those given smaller doses were neither infected nor immunized. However, natural subclinical infection does occur, possibly due to absorption of antigen through the mucosa.

Vaccination should be practiced regularly in areas such as river deltas, where the disease frequently occurs. In other areas, vaccines usually are used only when the disease appears. Oil-adjuvant vaccines have given the best results prophylactically. However, in one experiment, only half of the animals were protected against challenge in two weeks; all of them in four weeks. Therefore, during an epizootic, a dose of plain bacterin should also be given (the two can be mixed) for quick protection. When properly used, plain bacterin confers immunity for one to two months, alum-precipitated vaccine for about five months, and oil-adjuvant vaccine for eight to 12 months.—*R. V. S. Bain (F. A. O.) The Problem of Hemorrhagic Septecemia in Cattle. Ceylon Vet. J. (March, 1957): 2-7.*

Asian Bovine Pasteurellosis—1955-1956 Epizootic in Ceylon.—Hemorrhagic septicemia had been reported in Ceylon cattle and buffaloes at two- to three-year intervals for 25 years, but never as a severe epizootic septicemia until 1955-1956. It is suggested that exhaustion may have been the stress factor which precipitated this epizootic. The work done by buffaloes in cultivating land had almost doubled in ten years, while the number of work animals increased only 50 per cent. Meanwhile, their grazing land, per head, had declined sharply (they are almost entirely dependent on grazing) in a period of unprecedented drought.—*L. Dassanayake in Ceylon Vet. J. (Sept., 1957):56.*

Brucellosis in Reindeer.—Multiple bursitis, tendovaginitis and, in some cases, arthritis and orchitis in reindeer in the northern part of Russia were found, serologically and pathologically, to be due to brucellosis.—*Vet. Bull. (Dec., 1957): Item 3522.*

Anatomical Nomenclature.—An International Association of Veterinary Anatomists was founded, in September, 1957, at the 54th meeting of the Anatomical Society in Freiburg, Germany. This association was proposed in 1955 by Prof. C. Bressou (Alfort, France), who was elected the first president. Twenty-one veterinary anatomists attended, most of them from Europe. Their chief activity was nomination of a nomenclature commission to revise terminology of veterinary anatomy and to plead for its international adoption. The group was invited to visit the Department of Anatomy in Copenhagen in the summer of 1958.—*Irish Vet. J., 2, (Nov., 1597): 222.*

[Veterinary anatomists in America should participate in this activity. Uniform anatomical terminology is vital.—W.A.A.]

A Comparison of Economics in Large and Small Animal Practice as Experienced in a Partnership

RAYMOND E. McKINLEY, V.M.D.

Erie, Pennsylvania

WITHOUT GIVING a lot of figures on the details of our partnership practice, I would like to indicate how the figures were obtained and present a general description of the practice and facilities so others will have some basis for comparison with their practices.

We have a two-man partnership, including both the large and small animal phases of veterinary practice. My partner does the small animal practice and I do the large animal work. Each enters the other's field of endeavor only for consultation or in an emergency. This arrangement has worked well. It allows each of us to specialize to a greater degree and to give better service to the clients.

Our hospital—70-cage capacity—has modern surgical, x-ray, and communications equipment. Two vehicles are equipped for road work; one is a truck in many ways similar to the Medical Coach equipment.

Our total investment is about $100,000. Each of us spends about an equal amount of time on the job, conservatively estimated to be about 3,600 hours per year (72 hr./wk.—50 wk./yr.). We hire a secretary and three full-time lay assistants. Occasionally extra help is hired to assist with the testing programs (blood testing, etc.).

This report covers the 12 months from June 1, 1956, to June 1, 1957. The combined practice grossed $61,000 of which $22,000 was derived from the large animal phase. The net profit in the combined practice was 29.7 per cent. In figuring the two phases separately, it was found that the profit on the large animal phase was $8,316 (37.8%) and on the small animal phase, $9,828 (25.2%).

Whether a practice is conducted from an elaborate office or hospital, or from the veterinarian's home, the same types of expenses are encountered, the only difference being in the amount involved. Our expenses are classified and apportioned as shown (table 1).

Some of the expense items can be charged entirely to one or the other phase of the practice; others are assigned as estimated and agreed upon by the partners; some, such as labor and drugs, were calculated accurately.

TABLE 1—Assignment of Expenses

Classification	Large animal (%)	Small animal (%)
Assessments, subscriptions and dues	50	50
Auditor and attorney fees	50	50
Bank charges	50	50
Car expenses	90	10
Depreciation	As estimated	
Donations	50	50
Drugs	Actual costs	
General expenses	60	40
Heat, light, water	10	90
Telephone	50	50
Insurance	50	50
Interest paid on loans	Accurately figured	
Interest on investment	50	50
Kennel	00	100
Laundry	00	100
Office supplies	50	50
Payroll	Accurately figured	
Building repair and maintenance	15	85
Equipment repair and maintenance	Accurately figured	
Taxes and licenses	25	75

We have charged interest on the money invested in our physical establishment. This is a considerable item which is often ignored in calculating the expenses of operating a veterinary practice.

Further analysis of the records shows that the net profits per hour were: $2.24 in large animal practice; $2.59 for conducting state work (blood testing, vaccinating, etc.); and $2.70 in small animal practice. The cost of making a farm call was $4.19. The cost of an office call was not determined in this study.

The results of this study indicate that, in this practice, there was a slight profit advantage in small animal work. It is also less strenuous since much of the large animal practice is harder work and a man who is not in good physical condition can not do it.

However, we expect our income from large animal work to increase as further

Dr. McKinley is a large animal practitioner in Erie, Pa.

Presented before the Section on General Practice, Ninety-Fourth Annual Meeting, American Veterinary Medical Association, Cleveland, Ohio, Aug. 19-22, 1957.

improvements are brought about. We plan to further emphasize preventive medicine, pregnancy and sterility programs, and mastitis prevention and treatment on a herd basis.

These are what one might call profit-sharing programs, and they should be provided to the farmer on that basis. We should be able to show the farmer that he can not afford to be without this type of service; that the investment he makes in our services will increase his profits. I anticipate that, with adequate veterinary help, we should be able to increase our gross in large animal practice to $40,000 per year if we promote an adequate educational program as to the benefits of these services.

Insofar as the small animal practice is concerned, it is evident that in our particular case we need to increase our total volume of work without appreciably increasing the lay staff. We know that this can be done, providing we have adequate veterinary help available. We need two veterinarians during office hours so that our clients will not have an unduly long wait, and we need an adequate veterinary staff so they will not have to work a 12- to 15-hour day. Men who are not tired can work more efficiently.

We feel that certain fees need adjusting upward, but that most of our fees are adequate. In general, our fees are the highest charged in the area, yet our net profit per hour is low in comparison with other professions and occupations.

If a veterinarian works alone, does all his own bookkeeping and kennel cleaning, etc., his expenses will be lower than ours. However, his gross income will also be lower since his time will be used, in part, doing chores that lay help can do.

Furthermore, it seems that some veterinarians have not changed with the times. Those who make large animal calls for $3.00, or who remove the fetal membranes and treat the uterus of a cow for $4.00, or who castrate horses and give tetanus antitoxin for $5.00 or less would seem to be underestimating the value of their services.

The American Veterinary Medical Association should take the lead in attempting to advise the practitioner in this vein. It should also promote the addition, to our veterinary school curricula, of lectures to assist the development of sound judgment in these matters by our graduates.

Many graduates today have the idea that the only way they can get started in veterinary practice is by making their fees low enough to attract clients away from older, more experienced men. Correcting this difficulty is also the responsibility of our local organizations. The members should work together and establish a reasonable minimum fee schedule. They should welcome newcomers to the area and provide them with the necessary information and then assist them to establish their practices in a professional manner.

New, Less Toxic Insecticides.—Two derivatives of chrysanthemumic acid, a synthetic acid which makes up part of the molecules of pyrethrum and allethrin, are one eighth as toxic as pyrethrum and one third as toxic as allethrin, which is considered the safest insecticide and is widely used in households. The new agents are less effective as insect killers than DDT and other hydrocarbons, but these leave toxic residues. The new agents especially effective against the body louse are not yet on the market.—*U.S.D.A., Jan. 2, 1958.*

Dieldrin Poisoning in Man.—Of 417 spraymen repeatedly exposed to dieldrin, in three foreign countries, 63 developed clinical signs of poisoning, 28 developed convulsions, and one died. Their exposures varied from four to 40 months.—*Pub. Health Rep. (Dec., 1957): 1087.*

A Fungicidal and Insecticidal Antibiotic.—A yellow antibiotic which is active against fungi and also against insects has been isolated from a strain of Streptomyces. It has been named flavensomycin. Against certain insects, it is ten times more active than DDT.—*Nature, 179, (June 22, 1957): 1307.*

Growth of Disease-Free Pigs.—A comparison of crossbred pigs from related gilts, raised together to the time of farrowing, showed that those obtained by hysterectomy, and raised disease-free, weighed 215 lb. at 154 days whereas those farrowed normally on pasture, but otherwise on similar rations, weighed 163 lb. Of 48 raised on pasture, 12 (25%) died; of the 41 disease-free pigs, only 5 (12%) died.—*G. E. Young in Timely Topics, Univ. of Illinois, Dec., 1957.*

Veterinary Public Health Matters in Colonial America

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BEFORE THE COMING of the white man, the American Indian had no domestic animals, nor did the first settlers find any domesticable species save the turkey. The foundation stock of the colonial livestock population, therefore, was imported from Europe. While the animals brought to New Spain in the 1500's had increased prodigiously by the end of the century, none of these reached the British settlements during the period of colonization. And while livestock was brought on nearly every voyage to Virginia after 1609, and to New England after 1624, relatively few animals were imported, primarily because of the cost of transportation. Due, in large part, to being brought into a practically disease-free environment, and the fact that they were valued possessions, these small numbers increased rapidly—in many instances to the point of becoming a nuisance. Within a few years, swine became so numerous in both Virginia and Massachusetts that ordinances restricting them had to be passed.

The most superficial study of the colonial town records of any of the settlements clearly demonstrates that livestock played an important part in everyday life. The earliest concern was over the manner of handling the animals which grazed upon the town commons. Grazing on the commons in England had been a fertile source of contagion, but this apparently was not a problem in this country until late in the colonial period, when the practice was being superseded by an agricultural rather than a town economy. But, as the livestock population increased, so did animal disease and, with the latter, a number of problems of a public health nature inevitably arose.

That these problems relating to animal and human health were not considered as being in the veterinary domain is not surprising, for the American colonies had no veterinary profession—nor did they recognize the need for one. The injuries and ailments of animals were attended by the owner as best he could or, occasionally, by the relatively scarce self-denominated farrier or cow-leech—who likely as not often added to the misery of his patients. What is probably the earliest record of veterinary services of any kind in America is the mention of a William Carter, a cow-doctor in James City, Va., who in 1625 was involved in a lawsuit over a cow he had treated for a "fistula" of the eye, for which Carter had "used his best skill, yett at length she dyed."[2] Few such references are to be found, unless a legal opinion was required as an aftermath of the medical attention.

Under such conditions, it is perhaps obvious that the earliest records of problems now considered to be wholly, or in part, in the veterinary domain should have been those in which there is an interrelation between animal and human health. But what we would today consider as veterinary public health matters were not recognized as such in colonial times. If the colonist neglected the control of his animals—which fared surprisingly well despite the seeming lack of attention—the colonial town fathers were considerably more astute in framing measures to protect the populace, whether from Indians, animals, or epidemics. More or less in the order in which action was taken, these public health problems can be categorized as follows: (1) restrictive measures against livestock; (2) regulation of slaughter and disposal of animal wastes; (3) food hygiene, including inspection of foods of animal origin; (4) control of animal diseases transmissible to man.

RESTRICTIVE MEASURES AGAINST LIVESTOCK

Almost from the very beginning of the Massachusetts settlements, town ordinances regulating the herding and movement of livestock were put into effect. Cows belonging to private citizens, along with the town bulls, grazed on the commons under the care of keepers as late as 1800, and apparently occasioned relatively little trouble. Pigs were kept at first in the same manner but, pigs being pigs, they proved troublesome from the outset, and many families simply let them roam. Apparently free from disease themselves,

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they soon became a menace to the community as indicated by the following excerpt from the town records of Boston for 1658:[3]

> Whereas by long and sad experience very many and greatt damages have accrued to this towne by swine, besides the many dangers that children have beene in of loss of life and limb, and elder people also of greatt hurt, by the unruliness and ravenousnes of swine, and notwithstanding the law in that case provided by the Gen. Court that requires the making and constituting effectuall orders to prevent all harmes by swine. And although yearely endeavours have beene to attaine the end aforesaid and yett fruittles.
>
> Itt is therefore ordered that henceforth every inhabitant in this towne that shall keepe any swine within this towne after the first of next month they shall constantly keepe up such swine in their owne ground . . . yett shall so keep them . . . [without] the anoyance of any neighbors or travellers through the comon streetes or high wayes, upon the foresaid penalty [two shillings, six pence] for every offence.

But in 1671,[4] this law required restatement, "this town haveing lately many and greivous complaints of greate suffringes by . . . swine in this towne, and alsoe consideringe the many inconveniencies by the aboundinge of these creatures, in a towne soe populous as this is in respect of sicknesses & the like." And in 1701,[5] not only was it illegal to allow swine to go at large upon the town, "Nor shall any person keep any hogg or swine in any hoggstey within twenty foot of any highway, street, lane or alley within this neck of Boston, or the dwelling house or shop of any Neighbour." Legislative acts such as these failed in their purpose, however, and swine continued to roam the streets long after towns had become cities. One of the first reforms urged by the *New York Evening Post* upon its establishment in 1801 was the clearing of pigs from the streets.

Dogs too had their day in court; as early as 1635, the town of Salem[38] passed a dog ordinance requiring, among other stipulations, that they "be tyed up in the day tyme & if any doggs there spoile fish . . . they also shall either be sent away or killed." And at Ipswich, in 1644, dogs were required to have one leg tied up to prevent their digging up fish in the cornfields. (A fish was placed in each hill of corn as fertilizer—a practice learned from the Indians.)

The cow keepers of Boston town, in 1692,[6] were given liberty to "destroy and kill any dog or dogs they shall find to seize upon any cow or cattle." In 1696,[7] "Noe person whatsoever shall keep more than one Dogg, or Bitch in the Town . . . [and] noe Hounds or Hunting Dogs shall be suffered to Goe at Large in the Town. . . . It shall be lawfull to any of the inhabitants of the Town to kill and destroy any Dogg so kept [contrary to these orders]." Although the wisdom of allowing any person to act as judge and jury in such cases may be open to question, in 1701,[8] it was ordered further that after notifying the owner, any inhabitant could "cause the Town to be rid and discharged of" any "unruly Dogg or Bitch, that . . . hath been known to bite seiz upon worry or do harm to man or beast."

Wolves, and dogs—many with the demeanor of wolves—were a powerful deterrent to the sheep industry of the colonial period, and for some time after. In 1794,[40] a traveler through southeastern Pennsylvania wrote, "Sheep are not well understood, little attended to, are very often destroyed by the Wolves & few People therefore except of good Capital keep them." The wolves were slowly decimated by a bounty system and by the encroachment of civilization but, as the wolf was pushed into the hinterland, the semiferal dog took his place—and with a vengeance. Pennsylvania attempted to counteract these depredations with a dog law in the early 1800's,[33] but how effective this may have been is a moot question.

The broad aspects of this problem are clearly stated in an exchange of letters, in 1811, between Thomas Jefferson (after his retirement from public life) and a Peter Minor. While their thoughts on the matter may appear harsh, it should be recalled that Jefferson was an astute farmer as well as an able public servant, and his correspondent seems to have been equally well versed in agricultural and legal matters. Minor[1] had proposed a dog law for Virginia patterned after the one in effect in Pennsylvania, adding,

> Since the introduction of the Merino & other valuable breeds of Sheep, I think it particularly behoves us to guard against their destruction by dogs. But Independent of their propensity to destroy Sheep, why should we not endeavor to diminish a race of Animals which to make the best of them are a nuisance, but when con-

sidered in a state of madness are certainly as great a curse as can visit us.

To this Jefferson[1] replied,

I participate in all your hostility to dogs, and would readily join in any plan of exterminating the whole race. I consider them as the most afflicting of all the follies for which men tax themselves, but as total extermination cannot be hoped for let it be partial. I like well your outlines of a law for this purpose: but should we not add a provision for making the owner of a dog liable for all the mischief done by him? . . . the average of what they get fairly and unfairly of the food fit for man, would feed a man . . . [and] are there not as many sheep and hogs annually lost to the owners by dogs, or with their aid, as there are dogs in the state?

REGULATION OF SLAUGHTER AND DISPOSAL OF ANIMAL WASTES

In the first days of the colonies, the slaughter of meat animals was not a problem. The first few animals brought over were intended for foundation stock and, while hogs in Virginia soon became so numerous that the Indians reportedly gave up deer hunting, the killing of cattle was made a capital offense. Later,[20] the law was relaxed to allow the killing of cattle that had "ceased to breed, or were stricken with a disease or infirmity that would inevitably end in death." If the latter seems esthetically offensive and fraught with possible dangers to health, earlier it had been a common practice in England for landowners to feed their laborers on sheep that had died of anthrax! And the Jesuit priest-explorers of the Mississippi Valley more than once were forced to eat animals they found dead in the wilderness. During the "starving time" of the winter of 1608, in Jamestown, men reportedly turned to cannibalism of their dead fellows, and one man was burned at the stake for killing and salting his wife. Presumably, he expiated his sin by providing the next few meals for the jury of his peers.

With most of the meat supply being wild game killed in the woods, the public health problems attendant upon the establishment of slaughterhouses did not exist. But as towns grew in size and the livestock population increased, slaughtering became a regular industry. A particularly revealing series of entries is to be found in the town records of Boston in the 1640's:

(1642)[9]. It's Ordered that the Constable shall give speedy notice to Robt. Nash, Butcher, that with all speed he remoove the Stinking garbage out of his yard, nere the street, and provide some other remote place for slaughter of Beasts, that such loathsome smells might be avoyded, which are of great annoyance unto the neighbours, and to strangers.

(1647).[10] It is ordered that the anoyance that is made bye Robt. Nash in his slaughterhowse, by his killinge of beasts in the street now layd out, that hee shall remove that anoyance on penalty of 19s. 6d. for evry defect justly complayned of.

(1649).[11] Robert Nash is fined 19s. 6d. for his leavinge his slaughter howse with noyesome smells, to the offence of the Towne.

Mr. Nash may have been the only butcher in Boston at this time, for the ordinance framed for the relief of the town from this specific nuisance was not extended to all until 1652,[12] when it was ordered:

. . . that noe person inhabiting within this Towne shall throw forth or lay any intralls of beast or fowles or garbidg or Carion or dead dogs or Catts or any other dead beast or stinkeing thing, in any hie way or dich or Common within this neck of land of Boston, but ar injoyened to bury all such things that soe they may prevent all anoyanc unto any.

Whether convenient burying ground became scarce, or the town fathers felt that an easier method might result in greater compliance, they decreed in 1666[13] that, "for the prevention of annoyance to the Town, all garbidge, beast entralls &c. are to be throwne into the Mill Creek over the Mill Bridge upon penalty of 20 shillings for every default." Later it was stipulated that not more than three slaughterhouses should be erected over the Mill Creek; it was not until 1798[14] that one of the duties of a newly appointed health officer was "to prevent dead carcasses and other nuisances being thrown into the Mill Pond."

The appointment of a health officer for Boston town followed closely upon a law of the Commonwealth providing for similar services, and later the same year the town fathers broadened this concept by establishing a Board of Health:[15]

The Duty of the Board of Health shall be to examine into all Nuisances & other causes injurious to the health of the Inhabitants whether the same shall be caused by stagnant Waters, drains, common sewers, slaughter Houses, Tan Yards, Fish Houses, Docks, Necessaries, putrid animal or vegetable substances or any other cause of whatever kind, which may be injurious to the Health of the Inhabitants as aforesaid, with power to search all houses, stores, cellars, ships & vessells where they may have reason to suspect any of the causes aforesaid to exist.

Food Hygiene and Inspection

As mentioned above, the British forbears of the American colonists had generally given little thought to the wholesomeness of their food supply, especially as it related to the lower classes. And as late as the 1860's, when Britain was ravaged by rinderpest, the eminent veterinarian, John Gamgee,[37] upon being asked by a German colleague what Britain did with her diseased meat, replied, "Eats it." It is not surprising, therefore, that few references should be found relating to food hygiene in the early days of the colonies.

The town records of Boston for 1654 indicate that two men were chosen for "Searchers and packers of Flesh and Fish," but subsequent appointments do not include the term "searcher," and it would appear that the duties involved mainly supervision of weight and the adequacy of the containers. The first specific reference to matters of food hygiene in Boston appears in the regulations for the town market in 1733:[16] ". . . if any Person or Persons Shall Presume to Expose to Sale in the Said markets or Either of them unholsom or Stale victuals, Blown meat, Leprous, or measly Swine, He She or they so offending Shall forfeit and pay in Proportion to the Offence."

The legality of this ordinance was confirmed in 1742, and orders were given to prosecute offenders. Nothing appears to have been stated concerning the authority for determining when an offense had been committed but, in 1742,[17] this matter was placed in the hands of the clerk of the newly erected Faneuil Hall Market, who "shall suffer no unwholsome or putrid Meat, or otherwise unfit for Sale, to be Sold there; and if any such be Offered to Sale, in the said Market, he shall be obliged to prefer a Prosecution against the Offender . . . [and] no Meat shall be left in the Market after it is shut up."

In a relatively short time after its settlement, Pennsylvania began to export considerable quantities of beef. In an act of 1727,[34] there was appointed "an officer for viewing, searching, packing or repacking and branding all beef and pork intended for exportation." While it may be presumed that this law was based more upon economic necessity than altruistic motives, it is at least an early recognition of the need for food inspection.

A major source of information on almost any aspect of colonial affairs is the writings of George Washington (42 large volumes). It is from these writings that we obtain a good picture of the problems of food hygiene in the military campaigns of the French and Indian and the Revolutionary wars. In 1755, Washington mentions the procuring of salt beef, some of which had to be condemned upon receipt. Because of the problems involved in storage and transportation of processed meat, it was preferred to drive live cattle behind the armies for slaughter as needed. Washington's passion for detail is demonstrated by his diagrams for battle lines in certain static campaigns in which the position of grazing fields and slaughterhouses for the army are indicated. The scarcity of transport emphasized the advantages of keeping slaughter cattle nearby. But in a fast moving campaign, the cattle could not be driven fast enough, and in a forced retreat they frequently had to be left behind, to the obvious advantage of the enemy forces. "Grass guards" were posted to protect the grazing cattle, but frequently cows were lost to the enemy or even to noncombatant Indians.

In a communication to Commissary Charles Dick, in 1755,[21] Washington directed: "You are, so soon as you arrive here, to give such directions as you shall see necessary about driving the Cattle to Fort Cumberland. You are to send up Doctor Walker, or go yourself there, to see them properly killed and salted." And later the same year, he wrote Commissary Thomas Walker:[22]

> I am sorry to find the Carolina Beeves are so unfit for Slaughtering. . . . {Colonel Stevens is} to assist you with with his advice, either to kill and salt, or feed them this winter. . . . Provender is very scarce in this Colony, however . . . As I am unacquainted with the proper methods to cure provisions, I must desire you will consult the principal Officers at the Fort; and if their opinions corroborate with yours, let some of the Beef be dried, as you propose. . . . I am informed, that meat will lie sometime in bulk without salt. I think you should not delay slaughtering the Beeves one moment . . . for the Cattle lose flesh every hour. . . . {and to Robert Dinwiddie} Many of the Carolina beeves are dead, through absolute poverty; and the chief part of them too poor to slaughter.

It might be noted that Washington was only 23 years old at this time, but was already a formidable military discipli-

narian. His order, "You are to send up Doctor Walker, or go yourself there, to see them properly killed and salted," meant exactly what it said. While it must be assumed that supervision of slaughter and processing by a medical officer was a gratuitous exception rather than the rule, it is evident that Washington insisted upon the best food hygiene at his command. His concern did not stop with matters of supply, but carried down to the welfare of all of his soldiers. Although Washington insisted on maintaining an aloofness even with his officers, as a good commander he was attentive to the needs of his men. In 1756, he wrote:[23]

> The Soldiers have made some complaints of their provision being very bad. The Commissary is ordered to inspect all that he can have the least doubt of and if there is any that can be saved, to put it into fresh pickle; what can not, must immediately be thrown away.

In a similar vein, one of Washington's first general orders as Commander in Chief of the colonial forces in the Revolutionary War (1775) reads:[24]

> Next to Cleanliness, nothing is more conducive to a Soldiers health, than dressing his provisions in a decent and proper manner. The Officers commanding Companies should therefore daily inspect the Camp Kitchen, and see the Men dress their food in a wholesome way.

And in 1777, he issued a general order requiring:[25]

> A fatigue party of an officer and twenty privates, to be employed to bury all the Offals in and about the Slaughter House, dead horses, dogs, or any kind of Carrion in and about the town; also to remove all the filth about the Gaol . . . otherwise as the weather grows warm, the consequences may be fatal, as well to the Soldiery, as the Inhabitants. . . . [also] The Commissary General to have his slaughter-house, at least a mile in the rear of the camp, and to be very careful to have the offals, of what he kills, buried, a sufficient depth under ground. . . . [and] The Slaughter pens are to be removed from the brooks which afford water for the army. The offal is to be buried once a day.

It was not until 1783, the last year of the war, however, that official provisions for civilian inspection of meat destined for the army were made. In a general order, Washington directed:[26]

> The Contractors for the Army having desired, that agreeably to Contract, a person might be appointed to inspect the Cattle destined for the Army, Henry Wykoff, esquire of Fishkill is appointed for that purpose . . . he was recommended by Mr. Parker [one of the contractors] who, himself, previous to the appointment, had condemned a large quantity of Beef wch. had been slaughtered and was ready to Issue.

These selections, culled from nearly 20,000 pages of the writings of Washington, are a representative sample of his thinking on military food hygiene and reflect his sagacity in all matters relating to military operations. From the above it is evident that, in principle at least, the fundamental basis for an adequate system of safeguarding the meat supply for the army had been evolved by the end of the Revolutionary War. How well the tenets of Washington were carried out in subsequent wars, in the nineteenth century at least, is open to suspicion—considering the "embalmed beef" scandals of the Spanish-American War.

Returning to civilian matters, a bill framed by Thomas Jefferson and enacted by the Virginia legislature, in 1786, became the prototype of similar measures in other states. This was:[19]

> A Bill Prescribing the Punishment of Those Who Sell Unwholesome Meat or Drink.—Be it enacted by the General Assembly, that a butcher that selleth the flesh of any animal dying, otherwise than by slaughter, or slaughtered when diseased, or a baker, brewer, or distiller, who selleth unwholesome bread or drink shall, on conviction the first time, be amerced; the second time he shall suffer judgment of the pillory, and the third time he shall be imprisoned and make fine; and every time after he shall be adjudged to hard labour six month in the public works.

ANIMAL DISEASES TRANSMISSIBLE TO MAN

While it must be supposed that animals suffered more from disease during the colonial period than is on record, nevertheless, it is a fact that animals in the New World enjoyed an immunity from large scale plagues—an immunity unknown for centuries in Europe. Not until the end of the colonial period did it become apparent that this immunity was a deceptive one, and that the furies were gathering to be unleashed in the nineteenth century. The one disease that reached alarming proportions prior to 1800 was rabies.

Although rabies had been the scourge of both dogs and man from the beginning of historic time, Noah Webster, in his "History of Epidemic and Pestilential Diseases" (1800),[39] states that this disease did not appear in America until 1769, at first in and around Boston. Webster says,

"Rabies in dogs commenced in this part of the world at this time" (1769). But on July 5 of the same year, George Washington noted in his dairy,[27] "A Dog coming here [Mount Vernon] which I suspected to be Mad I shot him, Several of the Hounds running upon him may have got bit. Note the consequences." While no "consequences" were mentioned in his diary, the fact that Washington should have recorded the occurrence in a rather perfunctory manner, and that he anticipated some untoward consequences, suggests some familiarity with the disease. As a matter of fact, rabies is first mentioned in the "Archives of Virginia" in 1753.

While reports of human infection are surprisingly scarce in the early reports from Boston, swine, which had the run of the streets, were bitten in large numbers, and foxes in the rural areas became infected. It seems that dog ordinances were ineffective in controlling the disease for, in addition to it remaining a problem in New England, rabies was reported to be "common" in Philadelphia and Maryland by 1779, and "raging" over all the northern states during the 1780's.[30]

The town fathers of Boston were disturbed over the dog menace, and, in 1784, it was recorded that:[18]

> The Committee Appointed to consider of the danger the People at large are continually exposed to, by the large number of Dogs, going at large in this Town, have attended that service—And as many Persons, not only in the Town, but in other parts of this Commonwealth, have been bit by that Animal, and some have lost their lives, & others in great Danger—therefore your Committee apprehend it of great consequence to the People, at large that some effectual method be taken to prevent, the growing evil complained of.

The committee requested instructions for framing a dog law, but it is not clear just what action may have been taken at this time.

In 1786, Washington wrote in his diary:[28] "A Hound bitch which like most of my other hounds appearing to be going Mad and had been shut up, getting out, my Servant Will, in attempting to get her in again, was snapped at by her at the Arm. The Teeth penetrated through his Coat and Shirt and contused the Flesh, but he says did not penetrate the skin nor draw any blood."

Thus in his usual vein, Washington was more concerned with the apparently unharmed individual than with his cherished dogs. His matter-of-fact observation that most of his hounds appeared to be going mad undoubtedly belies his concern over them, but perhaps suggests that the situation was by no means uncommon.

Human rabies had become a major problem during this decade; Webster (1800)[29] states that the gazettes of 1785 "abound with accounts of its dreadful effects," and during the following year, "many cases of hydrophobia were observed in the Southern States." The *Courant* for Dec. 31, 1789, reported that "in the State of New York a man died of hydrophobia, induced, it was supposed, from his having skinned a cow that had died of that malady."

The Philadelphia physician, James Mease, published a work "On the Disease Produced by the Bite of a Mad Dog," in 1792, in which he rejected the commonly held concept of spontaneous generation of the disease in man or dog, insisting that the only mode of transmission was the wound produced by the bite of an infected animal. His illustrious contemporary, Benjamin Rush, in "Observations Upon the Nature and Cure of the Hydrophobia" (1805), recognized the bite of a rabid, or merely "angry," animal as a cause, but listed 20 other causes, including fear, thirst, heat, cold, worms, dysentery, typhus.

Responsible physicians and quacks alike professed to "cure" rabies. In the former category was a Dr. Henry Stoy of Lebanon, Pa., who was "celebrated for curing persons bitten by mad animals." In 1797,[29] Washington gave a servant, who had been bitten, $25 for expenses for a trip to Lebanon for treatment. The physician's fee was $5. Concerning the "cure" of his servant Christopher, Washington notes:

> . . . he derived so much aid from the medicine he took as to have remained perfectly well ever since; and has placed such confidence in his Doctrs. skill, that he wou'd not again despair of being cured of the bite of a mad dog; if the Hydrophoby was strong upon him.

Not all those who professed to cure rabies were as magnanimous as Doctor Stoy, however. As related by Merillat and Campbell, in 1811, the New York legislature appropriated $1,000 to pay one John M. Crous for a rabies cure and received the following prescription:[35]

> Take one ounce of the jaw-bone of a dog, burned and pulverized, or pounded to fine dust.

> Take the false tongue of a newly foaled colt; let that be also dried and pulverized; and, Take one scruple of the verdigris which is raised on the surface of old copper by lying in moist earth; the coppers of George I. or II. are the purest and best . . .

It would, perhaps, be invidious to note that another century was to elapse before sound rabies control programs were worked out by responsible public health officers. And it is all too apparent that, for various reasons, the problem is not yet one of the past.

One other disease common to man and animals which became a problem during the period under consideration was anthrax, but this appears to have been confined, in epizootic proportions at least, to the West Indies. Fleming, in his work on "Animal Plagues," states that, in 1769:[31]

> An epizooty of anthrax on St. Domingo resulted in famine, compelling the colonists to salt or smoke the flesh of all their cattle—dead or dying from the anthracoid malady. The consequence was, that a carbuncular epidemy appeared, and in less than six weeks more than fifteen thousand black and white people had perished. The plague did not cease until the consumption of the poisonous flesh or "tassau" was interdicted.

The disease appeared again in epizootic proportions on the Island of Grenada, in 1783, and in Barbados, in 1795. Fleming quotes a contemporary report which records that:[32]

> On those plantations where care was taken to burn the carcases of the diseased cattle, no further consequences resulted. But they unhappily were few. On those where this precaution was not used, and, indeed, it is surprising that it should be used in any, seeing that the disease was new, and its effects unknown, the flesh of the cattle that died being dug up and eaten by the negroes, proved most dreadfully septic, producing a pestilential carbuncle, attended by a malignant fever. There were not wanting instances of the iniquitous practice of offering the flesh of the diseased cattle for sale, and on these occasions, such was the highly septic nature of this poison, that even touching the flesh, in such manner as that part of the sanies adhered to the finger, produced the same fatal consequence.

One instance of infection in a child which drank milk from a diseased cow was recorded, and Fleming suggests a possible relationship between anthrax and the outbreaks of "milk-sickness" in America in the nineteenth century. While this, of course, was due not to anthrax but to white snakeroot poisoning, it seems likely that the West Indies remained a reservoir of infection.

The first outspoken advocate of attention being paid to the diseases of domestic animals, especially those transmissible to man, was the famous colonial physician, Benjamin Rush. In an address to the medical students of the University of Pennsylvania, in 1807, on "The Duty and Advantages of Studying the Diseases of Domestic Animals, and Remedies Proper to Remove Them," Rush urged:[36]

> It is our duty and interest to attend in a more especial manner to the health of those domestic animals which constitute a part of our aliment, in order to prevent our contracting disease by eating them. . . . A few years ago, a farmer in New Hampshire, who had overworked a fat ox in the time of harvest, killed him and sent his flesh to market. Of four and twenty persons who ate it, fourteen died, and chiefly with diseases of the stomach and bowels.

In his address, Rush urged the establishment of a veterinary school by the University, but perhaps anticipating that this would not come about soon enough, suggested that medical men might make the study of animal disease a matter of mutual benefit to themselves and their rural clients. Had his plea concerning the diseases of animals transmissible to man borne fruit, Rush might have added the fathering of veterinary public health in America to his many and varied achievements.

In retrospect, while the concept of veterinary public health as such may seem to be relatively new, it is evident that the fundamental basis of such a service was laid down long before serious thought was given to the organization of an American veterinary profession.

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Epidemiology of Hog Cholera

Believing that the causative virus of hog cholera must be perpetuated in nature in a nonporcine reservoir intermediate host, Dr. R. E. Shope has found that the swine lungworm may be the carrier. Experiments indicate that this nematode can serve as a reservoir host for the virus which exists in a masked or occult, noninfective form.

Swine fed the lungworm larvae containing the masked hog cholera virus usually do not develop hog cholera. However, fatal cholera may then occur when these hogs are affected by some relatively innocuous stress factor. In the experiments reported, migrating Ascaris larvae seemed to provoke the masked virus to infectivity.—*Abstr. in Science, (Dec. 13, 1957): 1236.*

Observations on the Use of Lapinized Hog Cholera Vaccine

Field results with new vaccines often are quite different from those obtained experimentally on small numbers of animals.

Recently it was found, in France and Africa, that single doses of crystal violet vaccines may not produce lasting immunity against all strains of hog cholera virus. However, two doses of classical strain crystal violet vaccine given at 15-day intervals will protect fully against all strains of hog cholera virus studied.

During 1952, Rovac, given in conjunction with anti-hog cholera serum, was used extensively in France and Morocco.

In 1956, due to a severe outbreak of hog cholera in Casablanca, hog cholera serum was in short supply and Rovac was used

alone in both France and North Africa. In a number of pigs, severe postvaccinal reactions, diarrhea, high temperature, and death occurred from the seventh to twentieth postvaccinal day. In France, reactions occurred from the forty-eighth hour to ten days. Losses reached 40 per cent in some piggeries. Over-all losses in France were 3.25 per cent among 1,507 pigs vaccinated in 17 piggeries.

The course of the disease and necropsy findings were characteristic of hog cholera. Unvaccinated, susceptible pigs placed in contact with those given lapinized virus remained susceptible. The condition was not reproduced by injection of susceptible pigs with blood from pigs given the lapinized virus; nor were the susceptible pigs immune to hog cholera virus.

The use of Rovac or the new French lapinized vaccine "Merieux Pestovax," in conjunction with 15 to 20 cc. of anti-hog cholera serum, has been successful.—[*J. Hintermann: Observations on the Use of Lapinized Vaccine. Schweiz. Arch. f. Tierheilk., 99, (1957): 261-271.*]—JOSEPH P. SCOTT.

Controlling Hog Cholera in Germany

When hog cholera was common in eastern Germany, about 1950 to 1953, the "stamping out" method had to be replaced by an active immunization method. The crystal violet vaccine was used first on fattening herds, then on breeding herds when it was found not harmful to reproduction.

All pigs over 8 weeks old in the area were vaccinated and then, in 14 days, revaccinated with crystal violet vaccine. The disease was controlled in this area whereas in adjoining areas, where vaccination was not practiced, the incidence increased. The large area vaccination program apparently resulted in elimination of the virus from the area.—*H. Röhrer in Monatsh. f. Vet.-med. (Aug. 1, 1956): 34.*

Control of Hog Cholera in Russia

Reliable data on hog cholera in Russia are available since 1906. It was first recognized in the northwestern section, but was spread by the importation of breeding swine and also followed the construction of railroads. Before the disease was understood, 90 per cent or more of the swine in affected areas died. In 1926, simultaneous vaccination was introduced. It resulted in reduced losses but not in elimination of the infection. Simultaneous vaccination is still not forbidden but its use requires permission from the authorities.

In 1936, it was announced that cholera had been eliminated by the use of passive immunization and control measures. After the last war, cholera again appeared but was again eradicated in 1950. Since 1946, crystal violet vaccines have been widely used. They are prepared from native, American and, recently, from Chinese strains of virus. The Chinese strain has great virulence and good immogenic properties. It is a particular strain but not a special type of cholera virus. Crystal violet vaccines are used in establishments where garbage from restaurants is fed.—*P. S. Solomkin in Monatsh. f. Vet.-med. (Aug. 1, 1957): 416.*

Hog Cholera Virus in the Brain.—A relatively high virus titer in the brain of pigs killed three to seven days after artificial infection with hog cholera was believed to have accumulated there as the result of increased permeability of the blood vessel walls and not because of an affinity of the virus for nervous tissue.—*Vet. Bull. (Dec., 1957): Item 3587.*

Aftosa Virus in Frozen Bacon.—Bacon, made from swine slaughtered at the height of infection with aftosa (foot-and-mouth disease), contained large quantities of the virus. The virus was not affected when the bacon was frozen at −20 C. (−4 F.) and thawed. The virus loses its virulence when the pH of the bacon drops below 6.0.—*V. G. Wittmann in Berl. u. Münch tierärztl. Wchnschr. (Aug., 1957): 321.*

The Whiteside vs. the California Test for Mastitis.—In an investigation of the merits of the Whiteside test and the California milk (CM) test (*J.A.V.M.A.*, March 1, 1957: 199) made in Norway, the CM test was found superior. The Whiteside test was less specific, showing reactions in bulk milk samples from 82 herds in which only 57 had positive clinical cases, whereas the CM test showed positive reactions in 56 herds, all of which had clinical cases of mastitis or cows just fresh or at the termination of lactation. The CM test showed

no reactions until the milk cell count exceeded approximately 500,000.—*P. T. Jensen in Nord. Vet.-med., 9, (Aug., 1957): 590.*

Report on Zoonoses

The following items are from the reports *Morbidity and Mortality* issued weekly by the U. S. Department of Health, Education, and Welfare.

Anthrax.—Thirty-three cases of anthrax in man, with five deaths, were reported from 11 states during 1957—25 in northeastern states, 2 in Oklahoma, and 1 each in six other states. In 16 cases, the probable source of infection was imported goat hair, five had contact with dead animals, three with imported wool, three with imported hides, one with imported bone meal, and the source of infection in five persons was unknown.—*Dec. 28, 1957.*

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Psittacosis.—The 251 cases of psittacosis in man reported in 1957 is about half the number reported in 1956. Of the 61 cases on which detailed information was available, 52 persons had been in contact with psittacine birds, two with pigeons, four with turkeys in processing plants, and there was no known exposure to birds in three persons. There were no deaths.—*Jan. 4, 1958.*

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Rabies.—Of the five cases of rabies reported in man, only one had been given prophylactic therapy. This man, bitten on the cheek and forearm by his dog, developed rabies although he had been given 5 cc. of hyperimmune serum the day he was bitten, followed by 21 injections of vaccine. Two others were bitten by dogs but a child was probably bitten by a rodent. There was no history for the fifth case.

Rabies was reported in Connecticut for the first time since 1945. A rabid skunk was captured in July and a rabid fox in November. In Virginia, where canine rabies once was predominant, 73 per cent of the cases in 1957 were in foxes and only 6 per cent were in dogs—probably because of the intensive vaccination programs.—*Jan. 4, 1958.*

Rabies Virus in Ticks.—The virus could not be recovered from ticks allowed to engorge themselves on rabbits infected with fixed rabies virus. When ticks were infected by other techniques, the virus survived in ixodid ticks for about three days, in nymphal argasid ticks for about 14 days, and in adult argasid ticks for about 20 days.

There was no evidence of multiplication of the virus in the ticks, and those partially engorged upon virus suspension, then transferred to mice or guinea pigs to complete their engorgement, did not transmit the virus mechanically.—*Vet. Bull. (Dec., 1957): Item 3575.*

Abnormal Vertebrae in Dwarf Cattle.—A compiled report from investigators attempting to identify carriers of the dwarf gene in cattle, by radiographic methods, indicates that of 186 known carriers, 90 per cent had abnormal lumbar vertebrae (JOURNAL, April 15, 1956: 381). Of several thousand animals considered dwarf-gene free, 80 per cent had normal vertebrae, the other 20 per cent had mild abnormalities of questionable significance. Radiographs should be taken before the calf is 10 days old; the defects tend to disappear with age. —*Agric. Res. (Jan., 1958): 4.*

Experimental Scrapie in Goats.—Scrapie has been transmitted to goats by intracerebral inoculation of brain tissue from scrapie-affected sheep. It has been passaged in series through three groups of goats and back again to sheep. Of 20 Cheviot sheep inoculated intracerebrally, 8 developed scrapie. Of 67 goats thus inoculated, all developed scrapie in seven to 22 months, 50 of them in eight to 14 months.—*W. S. Gordon and I. H. Pattison in Vet. Rec. (Dec. 21, 1957): 1444.*

Controlling Scrapie in California.—Over 12,000 sheep have been destroyed as a means of controlling scrapie, in California, and inspection for signs of the disease are being made every three months on about 2,000 ranches.—*California Farmer (Jan. 4, 1958): 27.*

Trichinosis in a Cat.—Naturally acquired *Trichinella spiralis* infection in a cat was reported for the first time in Yugoslavia.—*Vet. Archiv, 27, (1957): 234.*

Correction—U.S.L.S.A. Notes

In the Jan. 15, 1958, JOURNAL, p. 54, Dr. John Christensen is erroneously given as chairman of the Anaplasmosis Committee. The chairman of this committee is Dr. K. J. Peterson, Salem, Oregon.

Surgery and Obstetrics
and Problems of Breeding

Canine Malignant Lymphoma, Simulating Hodgkin's Disease in Man

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IN THIS report, a neoplasia in a dog, simulating Hodgkin's granuloma in man, is presented because of the rarity of this condition in dogs. In 1903, Hodgkin's disease was reported[5] in 5 dogs and a pig, but it is apparent from the histological description that these cases almost certainly belong in the lymphosarcoma group.

In 1911, McFadyean microscopically examined tissues from a dog reported to have Hodgkin's disease[3] and stated that "this was a typical case." A well-documented case was reported in 1934[4] and was described as a cervical enlargement consisting of "matted nodes" in a mongrel dog. No other lesions were found at necropsy. Microscopically, the Sternberg-Reed type of giant cells, as well as reticular cells, plasma cells, eosinophils, and fibrosis, were observed. Acid-fast bacteria could not be demonstrated in this lesion.

In 1936, Hodgkin's disease was reported in a male Shepherd dog, 4 years old, which had enlargements of mesenteric, bronchial, and mediastinal lymph nodes and nodules in the lungs, liver, spleen, and pancreas. The microscopic lesions showed fibrosis, many polymorphonuclear leukocytes, and a few Langhan's type giant cells. Scattered multinucleated giant cells of the Sternberg-Reed type were also present, as well as eosinophils, reticular cells, and plasma cells.

In 1952, a case was described[1] in a female mongrel, 7 years old, which had enlarged mesenteric and mediastinal lymph nodes and nodules in the spleen and liver. Examination of the tissues revealed fibrosis, reticuloendothelial cell hyperplasia, and many areas with polymorphonuclear leukocytes. Plasma cells and eosinophils were numerous and large, and small foci of necrosis were present. Sternberg-Reed giant cells were rare. This article was an abstract and there were no photomicrographs, so it is difficult to evaluate the evidence that was offered in support of the diagnosis of Hodgkin's disease.

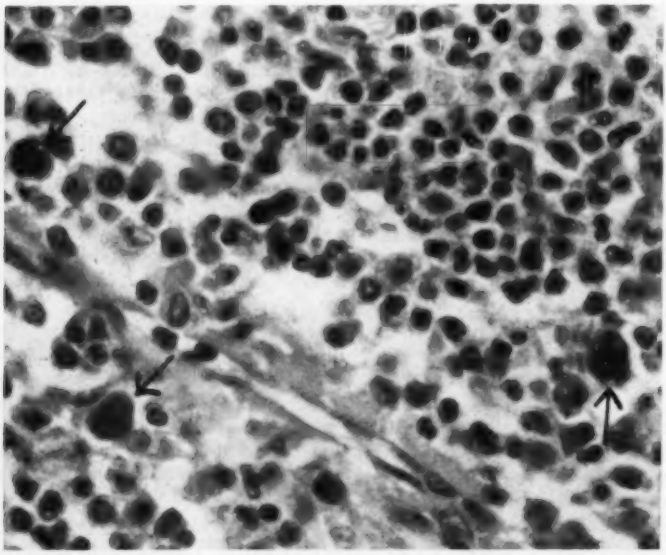

Fig. 1—Cervical lymph node biopsy specimen from a dog, showing three large Sternberg-Reed giant cells (arrows) with lobulated nuclei, prominent nucleoli, and generous cytoplasm. Plasma cells are apparent. Many of the lobulated leukocytes are eosinophils. x 900.

From the Department of Pathology, School of Veterinary Medicine, Davis, and the School of Medicine, San Francisco, University of California.

CASE REPORT

A female Cocker Spaniel, 8 years old, was first examined* Nov. 23, 1956, because of a tumor on the right front foot between the metacarpal and digital pads and involving the metacarpal pad. The lesion was removed and submitted for histological examination. The owner stated that a tumor had previously been removed from the same area, but was reluctant to divulge any additional information. On December 1, the dog was carefully examined, with particular emphasis on palpation of enlarged lymph nodes, but none was found.

By December 26, there was a large swelling of the right anterior cervical lymph node which, according to the owner, had developed in a few days. This mass was removed on Jan. 5, 1957, for examination.

On February 1, the owner reported that the dog had become lame in the right front foot. This lameness persisted but examination on February 20 revealed no explanation for it, and no enlarged lymph nodes were palpable. The owner stated that the dog had been having frequent digestive upsets, foul breath, and brief periods of severe depression. On March 5, because of a large swelling of the right prescapular lymph node, the dog was killed and brought in for necropsy.

*Examined by Dr. E. C. Story, Sacramento, Calif.

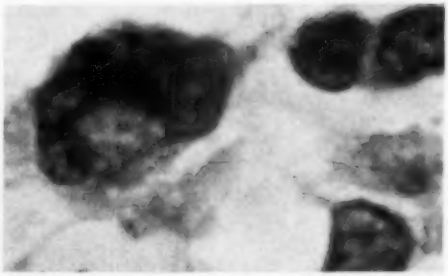

Fig. 2—Sternberg-Reed giant cell (left) from the cervical lymph node lesion in a dog. Note indented, lobulated nucleus and abundant cytoplasm which is poorly defined in outline. The nucleolus is difficult to discern in this photomicrograph. x 1,800.

Necropsy.—The spleen was enlarged and studded with raised white nodules 1 to 2 cm. in diameter. The liver contained numerous white foci (1 to 2 mm.) scattered throughout. The kidneys were of normal size and the capsules peeled with moderate resistance and one organ showed a few 1- to 2-mm. white foci. The lungs were with-

Fig. 3—Cervical lymph node from a dog, showing necrosis at the left (the pale staining areas) and diffuse Hodgkin's involvement. x 40.

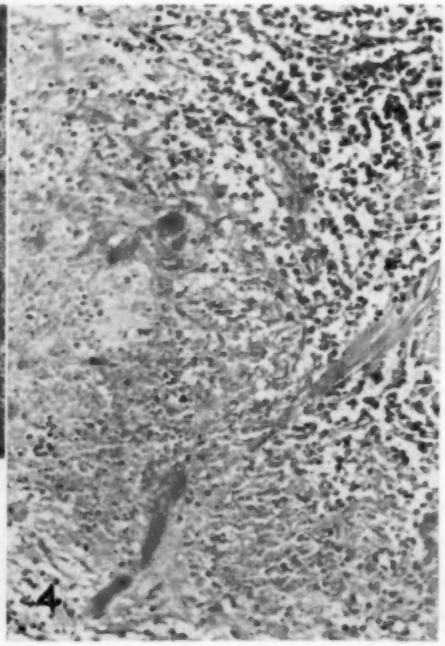

Fig. 4—Cervical lymph node wtih necrosis of Hodgkin's tissue at the left. The ghost outlines of the degenerating cells are apparent. x 255.

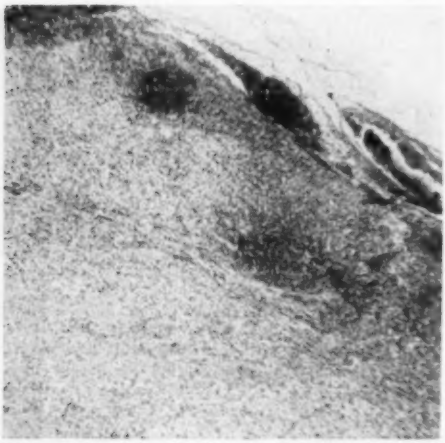

Fig. 5—Prescapular lymph node in a dog that shows marked replacement by Hodgkin's disease reaction. A few remaining lymph follicles are seen in the cortex in the upper part of the photograph. x 37.

out gross tumors and were reddened and moist.

The right prescapular lymph node measured 3 by 3 by 10 cm. and an anterior mediastinal lymph node measured 3 by 3 by 2 cm. Both nodes were fibrous and grayish white. No other parietal or visceral lymph nodes were grossly involved. No abnormalities were found in the thymus, thyroid, pancreas, adrenal glands, and brain; or in the right front foot. The bone marrow was not examined.

Microscopy, Biopsy Specimens.—Lesion from Right Front Foot (Biopsy 11/23/56).—The epidermis was hyperplastic but not remarkable otherwise except for an area of erosion and superficial acute inflammation. The main lesion was in the dermis, which was marked by an extensive cellular reaction with broad areas of fibroblastic proliferation of a rather clear-cut pleocellular type. Plasma cells were clearly prominent, as were large reticuloendothelial elements and a generous number of eosinophils. In addition, there were a few scattered, large Sternberg-Reed type cells having occasionally lobulated nuclei. Deeper in the tissue, there were several small foci of polymorphonuclear leukocytic accumulation which often immediately surrounded pink hyaline fibrin-like material. These tissues were stained by Gram-Weigert and by periodic acid-Schiff stains in an effort to find specific microorganisms, but none was found. Cultures of this tissue were not made.

Right Anterior Cervical Lymph Node (Biopsy 1/5/57).—In this node, the structure was completely obliterated by an abnormal infiltration of cells. There were broad areas of fibrosis and scattered groups of eosinophils and plasma cells. In

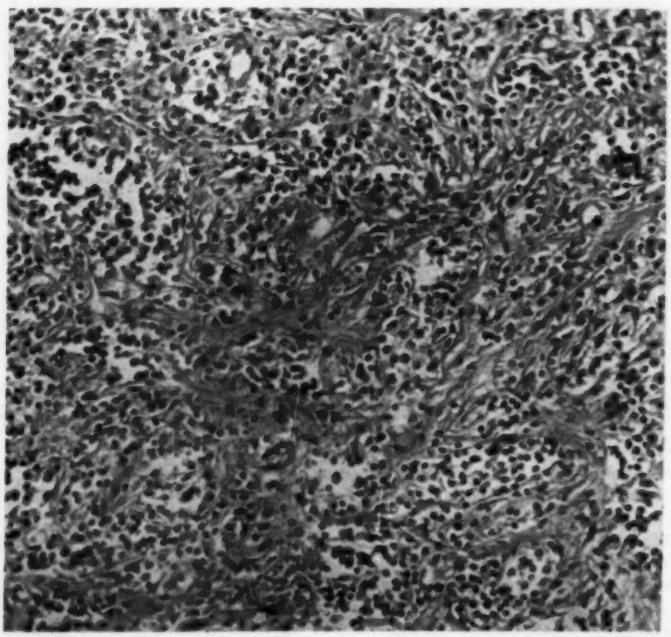

Fig. 6—Prescapular lymph node in a dog, showing general increase in reticulum and collagen with a pleocellular infiltration of a granulomatous type, cellular population having scattered Sternberg-Reed cells. x 320.

addition, there was a general proliferation of reticuloendothelial elements, and scattered throughout were individual giant Sternberg-Reed type reticuloendothelial cells, usually with delicate vesicular nuclei and often prominent nucleoli (fig. 1, 2). The nuclei were either single or folded and were occasionally multiple. None was of the Langhan's variety. In addition, there were generous areas of noncaseous-type necrosis in the nodes which were of an infarction variety with ghost outlines of the degenerating cells (fig. 3, 4). Although granulocytic cells were apparent in the tissues, they were observed much less frequently than in the foot lesion, and small neutrophil foci were not present. Bacterial stains failed to demonstrate organisms.

Microscopy, Necropsy Specimens.—The structure of the right prescapular lymph node was replaced and the pattern was obliterated by a pleocellular infiltrate composed of fibroblasts, reticuloendothelial cells, plasma cells, and eosinophils (fig. 5, 6). Fibrosis was particularly prominent and was arranged in whorls and islands and merged imperceptibly into a larger type of cell, with occasional multinucleated giant cell structures of Sternberg-Reed morphology. Necrosis was absent in these tissues, and an occasional group of polymorphonuclear leukocytes was encountered.

The lesion in the spleen was identical to that described in the right prescapular lymph node tumor. The architecture was distorted by the infiltration of cells. In addition, there was superimposed a definite scattering of pigment-laden macrophages, presumably containing hemosiderin. Scattered in the splenic reticulum were occasional megakaryocytes, although evidence of hematopoiesis was not apparent in the background. Necrosis and focal leukocytic infiltration was absent.

The normal architecture of the liver was clearly distorted by nodular infiltrations, many of which tended to start around the portal areas (fig. 7). The pattern was identical to that noticed in the spleen and in the prescapular lymph node. In this area, it was particularly suggestive of the typical Hodgkin's disease type of infiltration encountered in the liver of man, with fibrosis, granulomatous reaction, and scattered multinucleated Sternberg-Reed cells, but with no necrosis or focal polymorphonuclear infiltration. The liver cells were otherwise fairly well formed and with little evidence of fatty infiltration, although there was some atrophy due to the infiltrative process.

In the kidney, there were several small foci of neoplastic infiltration of the granulomatous pattern that particularly resembled that seen in the spleen. It contained pleomorphic reticuloendothelial cells and, in addition, several large multinucleated cells of the megakaryocytic variety. In most of the kidney, there was no infiltration—only a moderate degree of postmortem change, slightly congested glomeruli with normal vascular and tubular elements, and no specific degeneration or significant inflammatory reaction.

DISCUSSION

The example presented in the above report of neoplasia in a dog, resembling a Hodgkin's disease-like reaction of man, is unique in the literature in that, not only was a complete necropsy done, with micro-

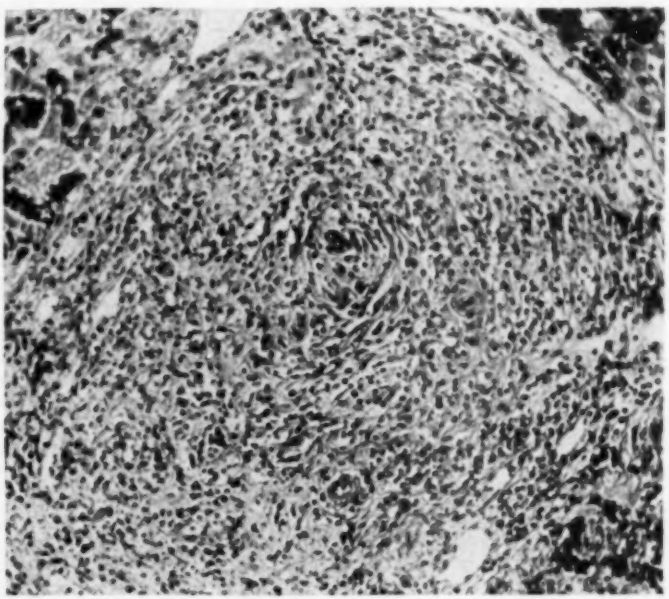

Fig. 7—Hodgkin's disease infiltration in the liver of a dog. This is a portal area that has been replaced with the granulomatous neoplasm. Distorted liver cells are apparent at the edges of the field. x 275.

scopic examination of tissue, but this was preceded by biopsy of a cervical lymph node mass that had the same characteristics that were demonstrated at necropsy. MacMahon's[4] case had, as its main finding, matted cervical lymph nodes with no microscopic or morphological evidence of neoplasia in other tissues. Other reports[1,3,6] presented only necropsy material of microscopically described lesions, as well as abundant gross evidence of infiltration of the viscera.

Characteristic of all the reports that have appeared in the literature of probable Hodgkin's disease in dogs has been the repeated descriptions of abundant eosinophils, generous numbers of plasma cells, and variable amounts of necrosis. One case,[1] particularly, showed generous necrosis and a scant number of reticuloendothelial cells of the Sternberg-Reed variety. Another report[4] is particularly descriptive of Sternberg-Reed cells that were present in large numbers and were well-documented by photomicrographs. It should be pointed out that in the tissues of the case reported here, as well as in photomicrographs of other cases, binucleated plasma cells are frequent. In our case, however, careful distinction was drawn between this type of multinucleated cell and the cell that is described as the Sternberg-Reed variety. In these tissues, a cell was accepted as the Sternberg-Reed variety only when its cytoplasm was abundant and rather poorly defined in outline, seeming to lie in a partially empty space in the tissues, and when the nucleus was vesicular in type and clearly lobulated, indented, or occasionally multiple. The cell, to be so named, had to possess a large prominent nucleolus, usually quite basophilic but occasionally dark lavender by hematoxylin-eosin stain.

In this case, the necropsy lesions as well as the cervical biopsy are clearly acceptable as being a granulomatous inflammatory-type process in which no bacteria were encountered and which was progressive and, undoubtedly, would have been fatal had the dog not been destroyed. In these tissues, although some necrosis was present, abscess formation was not part of the picture and the proliferation of fibroblasts and granulomatous tissue was the most prominent part of the process.

In this instance, the most provocative area requiring interpretation was that found on microscopic examination of the foot tumor. This lesion was particularly inflammatory in appearance in that it had definite focal areas of leukocytic infiltration with some central amorphous eosinophilic material. Apart from this reaction, however, the pattern was similar to that subsequently encountered in the necropsy material. Fibroblastic reaction was dominant with plasma cells, eosinophils, and rather widely scattered cells of the Sternberg-Reed variety. From the foot lesion alone it would have been impossible to venture a diagnosis of probable Hodgkin's granuloma, and it was only the subsequent evolution of the disease which justified that final diagnosis. Since the foot lesion occurred on the same side that the cervical adenopathy subsequently developed, it is assumed that all of the processes involved were basically the same disease.

It is our opinion that Hodgkin's disease can be considered as a malignant neoplasm of the lymphoma group. Its possible relationship to an inflammatory or specific agent has defied positive clarification.[2] Nonetheless, the occurrence of a possible site of origin, with subsequent drainage to adjacent lymph nodes, does have its counterpart in the repeated history of involvement of the cervical lymph nodes in man, the enlargement of which has been speculated upon as being due to the draining of an underlying deep or a pharyngeal area of Hodgkin's disease involvement. The parallelism between the lesion of the footpad in this dog, and its subsequent regional lymph node involvement, and the above described speculations in the literature is indefinite.

The specific diagnosis in this case might be presented from several aspects. It could be listed as a "probable Hodgkin's disease," "Hodgkin's disease-like granuloma," or as "Hodgkin's disease" in the dog. The authors are well aware that, in this instance, as in practically every other instance in the literature on the dog, the background inflammation component in the lesion is marked. Nonetheless, in this case a biopsy and subsequent necropsy presented a sequence of microscopic pattern that is entirely consistent with "malignant lymphadenoma" in man so frequently referred to as Hodgkin's disease. Perhaps the use of the term "Hodgkin's disease" is not proper in a dog since, of course, the disease that was originally described by Hodgkin was in a man. Thus, more properly the lesions in this reported case might best be called

"malignant lymphadenoma," a term used in Europe, for the disease in man, but not in the United States, where Hodgkin's disease is the synonym. Although recognizing from the microscopic tissues the modest reservations that would exist in stating unequivocally that the lesion in this dog is comparable to that in man, the lesions, microscopically and grossly, do possess the necessary criteria for Hodgkin's disease and, in addition, the disease did manifest itself as a progressive tumor in which staining efforts to establish a specific etiological agent proved futile. Under these circumstances, we think it is appropriate and proper to diagnose the disease in this dog as Hodgkin's disease, granulomatous variety.

SUMMARY

A case of malignant lymphoma in a dog, simulating Hodgkin's disease in man, is reported. The case is of interest because of the rarity of this condition in dogs and because of a pre-existing lesion of the foot in this dog, which may have drained into the regional lymph nodes, which subsequently became neoplastic. Grossly and microscopically, the lesions possessed the necessary criteria for a diagnosis of Hodgkin's disease in man. A review of previously reported cases of Hodgkin's disease in dogs is included.

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The Gestation Period of Donkeys.—Records kept at the Government Livestock Farm, Hissar (Punjab), on a total of 640 gestation periods in 128 mare donkeys, from 1916 to 1954, showed the average to be 374.43 days—about one half day longer for males than for females.—*Indian Vet. J., 34, (Sept., 1597): 344.*

Ovulation in Mares

In four years of sterility control, at a breeding station in Germany, records were kept on the normal and pathological ovulations in 972 mares. Regardless of the size or tension of the follicles, the most decisive factor in determining which follicle would rupture was the proximity to the ovulation fossa. For several days, a wedgelike extension of the follicle toward the fossa could be detected. After ovulation, the crater-shaped cavity was filled in a few hours by soft elastic tissue which changed to the rubber-like corpus luteum.

The constant development and physiological atresia, of the many follicles which fail to erupt, has a decisive influence on sex character. Double ovulations may occur in some mares, with one follicle from each ovary, resulting in retarded maturity and prolonged estrus and perhaps in interference with conception. In 1 mare, two follicles ovulated 36 hours apart. This mare was reinseminated and conceived but was not available for examination to determine whether the result was a twin pregnancy.

Single ovulations are sometimes delayed. One mare, on successive periods, ovulated several days after estrus had seemingly terminated. When then inseminated, she became pregnant.

Mares are often bred on the ninth day postpartum, but in 48 per cent of mares observed, ovulation occurred on the thirteenth day; in 52 per cent, between the sixth and thirteenth days.

Of the mares examined, 5 per cent had atrophy or dysfunction of the ovaries and a small uterus; the ovaries were pigeon-egg size, close to the spine, firm, and only slightly sensitive. When follicles were present, they usually remained unchanged for months. In some mares, this condition seemed due to an hereditary endocrine weakness, while in others, as in the American Thoroughbred, it seems to have resulted from racing or maximum effort; it is usually permanent. Mares older than 15 years may have large fibrous ovaries which also may contain follicles that remain unchanged for many months.

The prognosis is favorable in mares with atresia of follicles, double ovulation, ovulation with a deficient estrus, delay of ovulation, and in young mares with multicystic degeneration of the ovaries. The prognosis is unfavorable or hopeless in mares with nymphomania, atrophy and dysfunction of

the ovaries, senile induration of the ovaries, and in mares over 6 years old with cystic degeneration. Palpation of the ovaries is the key to the control of sterility in mares.—*Jurgen Lensch in Irish Vet. J. (Feb., 1957): 22.*

Insemination Capacity of Bulls

Semen is usually collected from bulls twice a week but investigation indicates that their breeding potential could be greatly increased by more frequent collections.

Collections made from a 2-year-old bull (Holstein-Friesian) 60 times per week for five weeks indicated that at least 7 billion spermatozoa were produced daily—50 billion each week. This was also true in 2 older bulls. Thus, about 290 million new spermatozoa are formed each hour (80,000 per sec.). An average of 70 billion spermatozoa were found stored outside of the testicles in slaughtered bulls—the equivalent of ten days' production. The formation of spermatozoa is continuous but, if not ejaculated, they disintegrate. Thus, the number collected depends on the frequency of collection.

The sexual preparation of the animal is also a factor. In several depletion trials, bulls ejaculated an average of 26 times in two to seven hours; the maximum being 77 times in five hours. From 1 bull, 79 billion spermatozoa were collected in seven hours. Of the first 20 ejaculations, 31 per cent of the total spermatozoa were contained in the first two, and 76 per cent in the first ten ejaculums. The volume and the concentration of the semen gradually decreased but the motility of the spermatozoa was rarely affected. In these bulls, the sperm concentration returned to normal in a week.

In depletion tests, when a bull had lost interest in one teaser, he would show immediate interest and ejaculate just as many times with the second teaser. Apparently, a bull should be able to breed about 1 cow per day.—*Hoard's Dairyman (Jan. 10, 1958): 13.*

Iowa Bull Studs Merge.—The cooperative bull studs at Sheldon and Des Moines, Iowa, merged in October. The former was the first association to use a 100 per cent frozen semen program. This program will be expanded, with headquarters at Des Moines. Every patron of the two associations will become a direct member and part owner of the new cooperative. The objectives of the merger were to more completely utilize the sires as well as the laboratory facilities, management, and field personnel. They expect to service about 115,000 cows annually.—*Hoard's Dairyman (Jan. 10, 1958): 40.*

Artificial Insemination Expanding

The commercial artificial insemination of swine has been started in four areas in England. The problem of dilution of the semen has been overcome partially by using glycine, but reasonable fertility is retained for only two days. Unlike the cow, the sow ovulates during estrus, so choosing the correct time for insemination is important. Results have been good when the herdsman knows the right time. Insemination of swine should be practical before long.—*John Hammond in zootech. e Vet. (Aug., 1957): 286.*

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Because of the development of the meat-type hog in America and for other reasons, export of Canadian bacon has been reduced, making it necessary to improve the quality of the bacon produced. The best way would seem to be by using semen from Advanced Registry boars for artificial insemination of a greater number of sows.

When means of bringing all ewes in a flock into estrus in a reasonably short (10-day) period becomes practical, artificial insemination will be practiced in sheep in Canada. Artificial insemination of horses is not permitted by the breed societies, but there is a constant demand for this service from dog breeders.—*C. A. Barker in Zootech. e Vet. (Aug., 1957): 286.*

Necrobacillosis in Newborn Lambs.—Many deaths (50% of those affected) occurred in newborn lambs, in Poland, where it was evident that *Actinomyces necrophorus* must have passed through the placenta. Typical necrotic lesions were found in the livers of lambs 3 days old, and the organism was recovered from the dam's placenta. Ten per cent of the ewes showed evidence of joint-ill.—*A. Skurski and A. Zakrzewski in Med. Wtryn., 13, (Sept., 1957): 516.*

White Muscle Disease (Myopathy) in Lambs and Calves
III. Experimental Production in Calves from Cows Fed Alfalfa Hay

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LOSSES OF young calves and lambs from white muscle disease (WMD) under Oregon conditions have been described.[8] Some irrigated areas where animals are kept in rather close confinement during the winter showed a higher incidence of the disorder than others. Occurrence of WMD was more frequent where legumes comprised the predominant portion of the winter feed, in the form of hay or, more rarely, silage. Losses of calves or lambs, regardless of the type or breed, have sometimes approached 100 per cent when such restricted winter diets have been fed to cows and ewes during pregnancy. It may be significant that much lower losses were often recorded in similar areas where the dams have been allowed access to native range forages.

The experimental production of degenerative lesions similar to WMD in domestic animals is not new. At the New York station, a high incidence of "stiff lamb" disease occurred in lambs born to ewes fed a ration of second-cutting alfalfa hay ad libitum, with a supplement containing 40 parts of cull red beans, 30 parts of barley, and 30 parts of oats.[12] "Dystrophy" was also reported in lambs from ewes fed a two-component ration—alfalfa hay and culled red beans.[11] At the Michigan station, heart lesions were produced along with other signs of "stiff lamb disease" in lambs fed a liquid, vitamin E-deficient, purified diet.[2,4] At the New York station, "muscular dystrophy" occurred in herbivora fed cod-liver oil.[6] More recently, in Scotland, skim milk diets fortified with cod-liver oil, at levels recommended for use in Great Britain, were utilized to produce severe "dystrophy" in dairy calves.[5] In Montana, the incidence of "muscular dystrophy" varied from 0 to 56 per cent in lambs from groups of ewes fed varying combinations of red clover and alfalfa hays (grown in "white muscle areas") with grains and protein supplements.[10]

Since none of these investigations duplicated, with cattle, the feeding conditions under which WMD is prevalent in Oregon, production of the disease with native feeds, under controlled conditions, was attempted at this station over a period of three years.

Concurrent with the experiments reported here, similar experiments have been conducted with sheep.[9]

EXPERIMENTAL PROCEDURES

Eleven Hereford cows, obtained from the Oregon Agricultural Experiment Station, were placed in a drylot pen on Nov. 18, 1953. They had no history of WMD. A similar number, designated as controls, were fed the regular winter ration of grass silage and grass hay.

Through the winters of 1953 to 1954 and 1954 to 1955, the experimental ration consisted of cull red beans and second-cutting alfalfa hay. The hay was from an area where considerable incidence of WMD had been reported; however, livestock were not maintained on the particular ranch where the hay was grown. Initially, each cow was given 15 lb. of alfalfa hay and 2 lb. of ground beans per day, gradually increased to 20 lb. of hay and 3 lb. of beans daily. After parturition, this ration was continued for at least one month, at which time the dams and offspring were placed on mixed Ladino clover and grass pasture. Breeding took place while on pasture. Winter feeding was resumed in drylot in October each year.

In the third experimental year (1955-1956), second-cutting alfalfa hay, from a ranch having a long history of WMD, was the sole feed. A ration of 15 to 20 lb. of the hay (increasing as gestation progressed) was fed each cow daily.

Samples of the feeds were subjected to proximate analysis in each instance. Calcium, phosphorus, magnesium, and manganese content were also determined. Blood samples, obtained at intervals from cows and their calves, were analyzed for tocopherols, calcium, and magnesium. The

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The assistance of Mr. Ted W. Willoughby in the care of the experimental animals and Miss Olga Gavillon in analyzing the feed for magnesium and manganese is acknowledged.

TABLE 1—Chemical Composition (Dry Matter Basis) of Feedstuffs Used in Production of WMD

	1953-1954		1954-1955		1955-1956		
	Beans	Alfalfa	Beans	Alfalfa	Alfalfa	Alfalfa*	Beans*
Ash (%)	4.71	7.68	4.45	7.04	6.95	9.06	4.38
Crude protein (%)	23.18	11.92	23.34	12.42	12.30	16.35	25.84
Ether extract (%)	1.57	1.30	1.40	1.18	2.12	2.21	1.35
Crude fiber (%)	3.84	35.13	4.08	34.64	28.32	31.93	4.61
Nitrogen-free extract (%)	66.70	44.97	66.23	44.72	49.41	40.44	63.82
Ca (%)	0.13	1.03	0.14	1.14	1.44	1.62	.....
P (%)	0.58	0.30	0.56	0.24	0.16	0.26	.....
Mg ((%)	0.05	0.45	0.05	0.39	0.31	0.32	.....
Ca/P ratio	0.22	3.43	0.25	4.75	9.00	6.23	.....
Mn (parts per million)	14.6	28.0	16.0	20.3	36.3	49.8	.....

*Data from Morrison.[7]

cows were weighed at weekly intervals to parturition time. In the third year, necropsies were done on all calves, either at death or when they were 2 months of age. Heart and muscle tissue were processed and subjected to microscopic study.

RESULTS

Initially, the cows were reluctant to eat the beans, but their condition was satisfactory throughout the experiments. Their average prepartum gains for the three years were 106.6, 169.2, and 125.6 lb., respectively. Calf birth weights averaged 60.4 and 72.0 lb. for the last two years but were not taken in 1953-1954.

Results of analyses of the feeds used in the experimental trials (table 1) are compared with similar feedstuffs as listed by Morrison[7] after conversion to a dry-matter basis.

The classification of the experimental animals and the incidence of myopathy among the offspring is shown (table 2).

Birth weights of calves of the experimentally fed cows tended to be lower than for calves of the control cows; however, the latter were a selected group. There was never any evidence of WMD among the control calves. One experimental calf (E86) died of WMD the second year, when 15 days old. The heart was moderately affected, but no evidence of skeletal muscle degeneration appeared on necropsy. The last calf (E90) born in 1955 grew slowly and appeared to suffer from muscular weakness and exhaustion; however, it recovered to some extent and reached 14 months of age before being slaughtered. No myopathy was apparent at that time.

In 1956, 4 calves died from WMD when 12 to 25 days old (table 2). All had extensive cardiac lesions, but the skeletal musculature appeared unaffected. The other 5 calves were slaughtered and examined. The last 2 calves born were slaughtered before 2 months of age, due to depletion of the experimental feed. Calves F151 and F158 appeared normal on necropsy. The other 3 slaughtered had myopathic lesions in varying degrees of severity. Differing from the others, calf F152 had extensive WMD lesions throughout the skeletal musculature.

In 1956, the experimental calves, even those which died spontaneously from WMD, appeared thrifty and, apart from occasional periods of lassitude, compared well in general health with the calves of the control cows. Typical white muscle heart lesions are shown (fig. 1, 2).

TABLE 2—Classification of Experimentally Produced White Muscle Disease in Calves

	1953-1954		1954-1955			1955-1956		
Cow No.	Calf No.	Sex	Calf No.	Age (days) at death	Sex	Calf No.	Age (days) at necropsy	Sex
A75	10	M	E 88	....	M	F 155*	21	F
B7	6	M	E 90	....	M	F 156†	59	F
6P	5	F	E 86*	15	F	F 159†	28	M
B80	7	F	E 83	....	M	F 153*	25	F
67	9	F	E 89	....	F	F 158	41	F
76	3	F	E 84	....	F	F 154*	26	F
B32	11	M	.....	....	..	.....	....	....
70P	1	M	E 81	....	M	.....	....	....
B82	8	M	E 87	....	F	F 151	64	F
B24	48	M	E 82	....	F	F 157*	12	M
A74	22	M	E 85	....	M	F 152†	55	F

*Died, WMD diagnosis; †killed, WMD diagnosis: §died, not WMD.

DISCUSSION

The production of marked lesions of WMD in 7 of 9 calves, born one season to cows wintered exclusively on second-cutting alfalfa hay from a ranch having a long history of the disorder, supports the contention that white muscle is a disease of nutritional origin. It must not be overlooked that the cows producing these af-

fected calves had been maintained for two previous winters on a bean-alfalfa diet, which may have contributed to the results of the third year. The high incidence of WMD in 1956, produced on hay from a ranch long troubled with the disease, as contrasted with the paucity of cases earlier when hay was used from the same general area, but from a ranch without a record of severe trouble, suggests that a soil-plant-animal relationship may be involved, and that the margin between health and WMD is a narrow one.

Among the chemical components of the ration studied, only the calcium-phosphorus ratio appears to be sufficiently different from published average values to excite interest. The implications of this wide ratio, in view of the calcification present in the white muscle tissues, will be the subject of further studies, as will the analyses of the animal tissues themselves.[5] Feeding trials are being continued with domestic and laboratory animals to determine whether consistent production of WMD may be achieved. Isolation of the responsible factor from causative feedstuffs is being attempted.

SUMMARY

The production of white muscle disease (WMD) was attempted in 11 cows, following general management practices and using native feeds implicated in occurrence of the disorder under Oregon field conditions.

Fatal WMD occurred in 1 of 10 calves born the second year when the cows were fed 15 to 20 lb. of alfalfa hay and 2 to 3 lb. of beans daily.

Seven of 9 calves born the third year when the cows were fed solely second-cutting alfalfa hay, from a ranch having a long history of WMD, had myopathic lesions at necropsy. Four of the calves died with heart lesions of variable severity. Of the 5 slaughtered calves, 2 showed heart lesions at necropsy at about 2 months of age, 1 had an extensive skeletal myopathy, and 2 appeared normal.

Analyses of the ration ingredients

Fig. 1—Transverse section through the heart in calf F-159, which died. Extensive white areas are apparent in the ventricular wall and interventricular septum.

Fig. 2—Section of heart (same as in fig.1) showing calcification of fibers. Von Kossa stain; x 400.

showed an unusually high calcium-phosphorous ratio in the alfalfa hay fed during the last year, in which the 7 white muscle cases occurred.

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Preventing White Muscle Disease in Sheep

When a flock of ewes, in New Zealand, was divided into three groups while grazing during their lactation period, there were no cases of white muscle disease in the group on pastures top-dressed with superphosphate, magnesium, and iron; there were 2 cases where only superphosphate and magnesium were used, and 12 cases where superphosphate was used alone.

The next year, when the whole farm was top-dressed with superphosphate, magnesium, iron, cobalt, and copper, there were no cases of white muscle disease.—*Vet. Bull. (Dec., 1957): Item 3672.*

Use of Normal Human Plasma (Lyovac) in Dogs

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Plasma, next to the use of whole blood, is recognized as the best agent for the control and maintenance of blood volume in the treatment of shock. The greatest obstacle to extensive veterinary use of plasma has been its unavailability. Since human plasma is sometimes available, we wondered if it could be adapted for use in canine patients. This is a report of such a study.

MATERIALS AND METHOD

The material used was lyophilized normal human plasma (Lyovac*), which was supplied in a 50-cc. bottle with enough diluent to restore the volume to 50 cc. When restored, the plasma must be used within three hours. In this experiment, the solution was injected intravenously at the rates described.

In order to evaluate the sensitivity of dogs to human plasma, the following procedure was followed, using 15 normal dogs: (1) The pulse, respiration rate, temperature, and weight of each dog was recorded; (2) 0.5 cc. of human plasma was injected, intradermally, and the animal was observed for 30 minutes for local and systemic sensitivity; (3) when no changes were observed at the end of 30 minutes, 10 cc. of plasma was given intravenously, and the dog was observed for 30 minutes; (4) if the dog remained normal, the remaining 40 cc. of plasma was given.

All of the 15 dogs were in good health and condition, with the exception of 2 males; 1 was slightly thin and 1 was obese. The ages of the 11 males and 4 females ranged from 1 to 6 years. Six of the dogs

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were purebred and 9 were crossbred; 6 were of the hunting type; 4 of the Collie type; 3 of the working type; and 2 of the Terrier type. They ranged from 18 to 50 lb. in weight.

RESULTS AND DISCUSSION

None of the 15 dogs showed any reaction to the 0.5-cc. intradermal sensitivity injection.

Eight of the 15 dogs showed signs of slight discomfort in the form of muscular quivering, trembling, drooling, and shaking of the head during, or immediately after, the 10-cc. injection of plasma. In most animals, the pulse weakened slightly and the rate decreased about ten beats per minute. In none of the dogs was the reaction severe enough that the intravenous injection had to be discontinued, and all the test animals were able to take the entire 50 cc. of plasma. All signs of sensitivity disappeared and the pulse rate returned to normal about 15 minutes after the completion of the injection; at the end of 24 hours, no abnormalities could be detected in any of the dogs.

Since only mild reactions were seen in approximately half (8) of the 15 subjects, the product was considered safe for use on canine patients.

Following the procedure outlined above, we have now used normal human plasma in over 100 canine patients (regardless of how severely injured), which were in various stages of shock, induced either by injury or by surgery. Of the group treated, there were 10 per cent fatalities, mainly in dogs injured in accidents. This was attributed to the severity of the injuries rather than to sensitivity to the plasma. In dogs that died, such irreparable organic damage as rupture of the liver, kidneys, or large abdominal blood vessels was found at necropsy. However, we believe that 4 of these dogs, in which hemorrhage was severe, might have recovered if additional plasma had been given.

We found that 50 cc. of the restored plasma administered intravenously was superior, with respect to the immediate response obtained, to any similar product used by us for this purpose. Improvement from the shock was usually noticed within ten to 30 minutes after the plasma infusion. If, at the end of 60 minutes, the improvement from shock was not sufficient, an additional 50 cc. was administered. This additional infusion of 50 cc. of plasma was also given without evidence of detrimental sensitivity.

Dual Vaccination of Mink Not Successful

In an experiment with 720 mink, in Germany, some were vaccinated simultaneously with type C *Clostridium botulinum* toxoid and with live virus distemper vaccine; others were vaccinated separately by various means.

When challenged with 1,000 lethal doses of the *botulinum* toxin, 5 mink which were vaccinated simultaneously, and 5 which were given the toxoid three weeks after the distemper vaccine, survived; the 2 control mink died in 16 to 20 hours.

When challenged with 100 lethal doses of distemper virus, all 5 mink which had been injected with distemper vaccine alone survived; all 5 which had been sprayed with distemper vaccine died; 3 of 5 injected with both agents simultaneously died; 1 of 5 given the toxoid, three weeks after the virus, died; and all 3 controls died.

All deaths occurred between 14 and 20 days after challenge. As a result, it was recommended that all mink retained after the pelting season be given live distemper vaccine annually, and that the type C *botulinum* toxoid be given three weeks before the distemper vaccine.—*Nat. Fur News (Jan., 1958): 14.*

Abomasal Ulcers and Aftosa.—At necropsy, a cow, in France, was found to have a perforated ulcer of the abomasum. The condition of the circumference of the ulcer indicated that it had been chronic, the subserous tissues having been exposed for some time. The cow had recovered from aftosa (foot-and-mouth disease) two years previously. This supports the hypothesis that peptic ulcers may occur with aftosa.—*Jean Macridès in Rec. méd. vét. (May, 1957): 279.*

Psittacosis in a Starling.—When 52 birds in an aviary in Pennsylvania were killed and examined, the psittacosis virus was isolated from 12, but there were no lesions except an occasional splenomegaly. The virus was recovered from a captive starling, the first time this has been reported. —*Vet. Bull. (Dec., 1957): Item 3602.*

Nutrition

A Disorder of Chickens Probably Due to a Toxic Feed—Preliminary Report

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IN MARCH, 1957, a disease entity of broiler chickens, characterized by labored breathing, droopiness, ruffled feathers, and high mortality, was brought to the attention of one of the authors (D.M.).

Examination of several groups of chicks, submitted to the Georgia Poultry Laboratory at Gainesville, revealed a marked hydropericardium; an enlarged liver, characterized by a roughened, cobblestone appearance on the surface, suggestive of cirrhosis; hydroperitoneum; and swollen, pale kidneys. A brief description of this disease has been published.[1]

Flock mortality has been as high as 90 per cent. None of the accepted poultry medicaments, including antibiotics, sulfonamides, and nitrofurans, have altered the course of the disease.

The progressive increase in morbidity and mortality in the involved flocks strongly suggested the presence of an infectious disease. However, repeated attempts, by routine cultural procedures, failed to demonstrate a primary infectious agent.

Further reports from the field indicated that the incidence of the disease was increasing. Standard cultural techniques inconsistently demonstrated micrococci or other bacteria which were not considered significant as primary infectious agents. Inoculation of embryonating chicken eggs by the allantoic and yolk sac routes failed to give conclusive results. The aid of other laboratories was enlisted but their results were also inconclusive.[2-5]

A review of the histories showed that many of the flocks became affected at 3 weeks of age. They were not geographically related, healthy flocks of the same age being interspersed among the affected ones. One common factor was that two feed mills, representing different companies, furnished all the feed to the affected flocks. Moreover, all of the flocks which were given feed manufactured by these mills during a specific period were affected. A toxic substance of feed origin was suspected but this had not been proved conclusively.

The manufacturer of one of these feeds (feed "A") enlisted the aid of several laboratories to conduct chemical studies on their feedstuffs. Their reports were inconclusive except that a number of chemicals including nitrates, nitrites, phenols, lead, arsenic (in toxic quantities), sodium chloride, cresols, and Warfarin were eliminated as causative factors.

One poultryman set up a trial with two pens of 1,200 birds each, with a wire partition between them. To one group, he fed the suspected feed and to the other he fed another commercial ration. In three weeks, those eating the suspected feed became affected and, by the time they were 9.5 weeks old, 1,036 (86%) of them had died. The other group remained healthy and, when 9.5 weeks old, only 15 (1.25%) had been lost.

In October, 1957, the disease again appeared in a large number of flocks fed a brand of feed (feed "B") manufactured by one mill. Again, the routine laboratory diagnostic tests were conducted with no conclusive results. The flock histories, together with the clinical signs and lesions, indicated that it was the same disease that had appeared the previous March. Within several weeks, the disease appeared in flocks using feeds from other feed manufacturers. The disease first appeared to be restricted to the southeastern states, including Georgia, Alabama, North Carolina, and Mississippi. Eventually, it was reported in Maryland, Delaware, Indiana, Ohio, and Arkansas. Due to its rapidly increasing incidence, the aid of the Poultry

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Disease Research Center of the University of Georgia was enlisted, as well as that of several other laboratories in the United States.

MATERIALS AND METHODS

Six hundred White Rock-cross chicks, 1 day old, were obtained from a commercial hatchery and were allotted to 20 groups in four, five-deck electric battery brooders, each in a separate room. Ten rations were prepared as follows:

a) Commercial feed "A" was obtained from a poultry house where affected chicks had been kept.

b) Commercial feed "B" was obtained from a poultry house where affected chicks had been kept.

c) Commercial feed "B" autoclaved at 121 C. for 20 minutes.

d) Commercial feed "B" extracted with water and supplemented with vitamins and minerals.

e) Basal control ration (Animal Nutrition Research Council reference chick diet),* a corn-soy bean meal diet, supplemented with vitamins and minerals.

f) Basal ration supplemented with water extract of ration *d*.

g) Commercial feed "B" extracted with 95 per cent ethanol and supplemented with vitamins and minerals.

h) Basal ration supplemented with ethanol extract of ration *g*.

i) Basal ration supplemented with 3 per cent animal *fat* submitted as a feed ingredient from the company which supplied feed "B."

j) Basal ration supplemented with a vitamin mixture as a feed ingredient from the company which supplied feed "B."

These rations were fed to each of two replicate groups which were arranged at random in the various batteries in four adequately ventilated animal rooms. Each group consisted of 25 chicks, except groups fed rations *a*, *b*, and *e*, in which 50 birds were started to provide additional chicks for necropsy during the course of the experiment. Quarantine procedures were practiced to prevent the possibility of transmitting an infectious agent from one group to another. The various rations and water were provided ad libitum, and brooder temperatures were regulated properly.

*National Research Council, National Academy of Science, Washington, D.C.

RESULTS

A few chicks in several of the groups died during the first few days, due to nonspecific factors including starvation, pasting of the vent, and getting their legs tangled in threads of the brooder curtains.

Five chicks from one replicate of each of the groups fed rations *b* and *e* were killed for necropsy at the end of one week. These chicks were essentially normal. On the thirteenth day, chicks in one of the groups fed ration *a* started dying. When 2 weeks old, 5 more chicks from the other replicate groups on rations *b* and *e* were killed; they appeared normal at necropsy. Chicks from the one replicate fed ration *a* continued to die, with signs and lesions

TABLE I—Schedule of Chick Mortality on Various Rations

Ration	No. of chicks	Room No.	Days following start of experiment																				
			13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
a	50	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
b	50	3	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	2	..	..	..	..	..	1	..
c	25	2	..	..	..	..	..	1	..	1	..	1	1	..	..	..	..	1	..	..	..	..	..	..	2
d	25	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	4	..	..	..	..	..
e	50	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
f	25	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
g	25	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
h	25	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
i	25	3	..	..	..	..	..	..	*	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
j	25	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
a1	50	12	2	6	6	4	5	1	5	..	..	..	1	..	2	2	..	..	1	2	..	1	..	..	..
b1	50	12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..
c1	25	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
d1	25	6	..	..	..	..	..	2	..	2	..	..	..	..	1	..	..	..	3	..	..	..	..	..	..
e1	50	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
f1	25	12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
g1	25	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..
h1	25	12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
i1	25	12	..	.	..	..	..	..	*	..	..	..	..	..	..	1	2	..	1	1	1	1	..	..	..
j1	25	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

* This ration discontinued due to exhaustion of fat sample.

Key—a=commercial feed "A" obtained from poultry house where infected chicks had been kept; b=commercial feed "B" obtained from poultry house where infected chicks had been kept; c=commercial feed "B" autoclaved at 121 C. for 20 minutes; d=commercial feed "B" extracted with water and supplemented with vitamins and minerals; e=basal control ration; f=basal ration supplemented with water extract of ration d; g=commercial ration "B" extracted with 95 per cent ethanol and supplemented; h=basal ration supplemented with ethanol extract of ration g; i=basal ration supplemented with animal fat; j=basal ration supplemented with a viamin mix; a1 through j1=replicates of groups a through j.

Fig. 1—Hydropericardium (arrows), characteristic of the disease, in a White Rock chick, 3½ weeks old.

characteristic of the disease; all were dead in 32 days.

At 19 days, chicks in groups on rations *c* and *d* started dying, and typical lesions were found at necropsy. The distribution of the death losses, which were considered to be due to the toxic feed, are shown (table 1).

CLINICAL SIGNS AND LESIONS

The affected birds showed droopiness and ruffled feathers. Several developed dyspnea and a ducklike appearance due to

Fig. 3—The distended abdomen of a chick, a result of the hydroperitoneum associated with the disease.

the accumulation of fluid in the abdominal cavity. At necropsy, in many cases, there was a moderate to severe hydropericardium (fig. 1, 2) and a posterior displacement of the liver which was often enlarged by 50 per cent. In addition, the liver showed a mottled appearance with irregular diffuse, lighter colored areas, resembling fatty change, interspersed with red streaks or patches.

In advanced cases, the liver surfaces were roughened, suggesting cirrhosis; however, this was not confirmed on microscopic examination. The birds on ration *a* that died during the latter part of the experiment actually had shrunken livers. (A more complete description of the microscopic picture will be given in a subsequent report.) In many instances, there was a hydroperitoneum (fig. 3) and extensive subcutaneous edema over the ventral por-

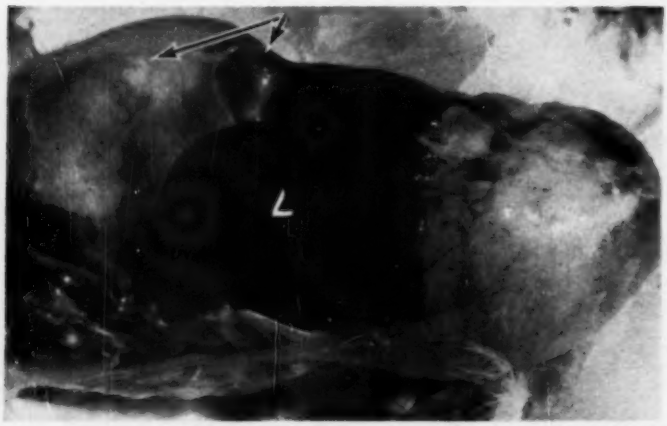

Fig. 2—A lateral close-up view showing the hydropericardium in a chick. The arrows show apex of heart and pericardium. Changes in the liver (L) can also be seen.

tion of the body. The heart was somewhat enlarged and the kidneys were usually swollen and pale, with hemorrhages involving the capsule of the anterior lobes in some cases.

Some of the birds showed hemorrhages of the skeletal muscles, suggestive of the hemorrhagic syndrome, and the cervical muscles on the dorsal surface of the neck were also involved. In a moderate number of examined birds, the crop contained bloody contents which stained the beak and feathers about the mouth when they regurgitated.

DISCUSSION

This incomplete piece of research work is being published with the hope that it will be of assistance to others and will aid in a rapid solution to this problem. Research trials in progress will be reported as they are completed.

The results obtained thus far indicate a trend from which the following conclusions may be drawn. Feed "A" was manufactured in March, 1957, which indicates that the toxic ingredient is stable in storage. The discrepancy between the two replicate groups to which it was fed is explained by the fact that the groups were fed from different sacks and apparently one of the sacks of feed was toxic and the other was not. To insure more complete control in setting up replicates, the feed from the two sacks of feed "A" should have been mixed and then divided.

Since the group fed the autoclaved feed "B" developed the disease, the toxic agent must be thermostable; and, since the group fed the water-extracted feed also developed the disease, the toxic factor apparently is not water soluble. Those fed the commercial feed "B" also were affected but only after several weeks, possibly due to a lesser concentration of the toxic substance.

The losses in the groups fed the basal ration to which was added the fat sample submitted by the company which manufactured feed "B" indicate that the *toxic factor* seems to be present in the *fat*. The disease is not believed due to the fat *per se*, since numerous experiments have shown that fat can be added freely to poultry rations wth no adverse effects.[2,6] The indications are that this fat contained some toxic material as a contaminant. Chemical tests are now in progress to determine the toxic material.

That the disease is not contagious is indicated by the fact that birds in adjacent pens did not become involved.

SUMMARY

An apparently new syndrome of broiler chickens made its appearance in March and then reappeared in October, 1957. It is characterized by droopiness, ruffled feathers, some labored breathing, and progressively increasing morbidity and mortality.

A moderate to marked hydropericardium, hydroperitoneum, swollen liver with a roughened surface and a discoloration with alternate areas of yellow and red tissues was found at necropsy. The kidneys were swollen and pale and there was often a subcutaneous edema in the ventral portions of the body.

Exhaustive laboratory tests indicate that the disease is noninfectious and is due to some toxic substance in the feed.

Feeding trials indicate that the toxic substance is stable in storage for eight months; stable to 121 C. for 20 minutes; and is not water soluble.

Losses from feeding a certain fat with the basal control ration indicate that the toxic material is present in that fat.

Further research is in progress.

References

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Rapeseed Oil Lowers Male Rat Fertility.—When erucic acid, a fatty acid found in rapeseed and related oils, was fed to male and female rats for five months, the males became sterile although still healthy. The fertility and pregnancy of the female was apparently not affected, but the offspring did not survive long.—*Sci. News Letter (Dec. 7, 1957)*: *360*.

Editorial

Bovine Pasteurellosis, Here and in Asia

At a time when the public is alerted to the presence of Asian influenza, it might be opportune to call attention to another Asian disease—this one a disease of ruminants, chiefly the bovine species. We refer to what is generally called hemorrhagic septicemia (H.S.) in Asia (*see p. 191*) but which we think should be called Asian pasteurellosis.

Because of the multitude of diagnostic errors that were committed in the name of "hemorrhagic septicemia," especially in the first half of this century, it is difficult to condone the use of that term even as far away as in Asia. Having observed, in recent years, the greatly reduced use of the term, except in Asia, it would be regrettable if it were resurrected in case the Asian form of pasteurellosis were to appear in America.

Ghost diagnoses, like other superstitions, are not abandoned quickly. I first undertook to expose this one (H.S.) at the AVMA convention in 1939. That was the result of a constantly unsuccessful search for pasteurellosis in livestock, while in practice. That experience was reviewed in an editorial in the JOURNAL (Sept., 1953).

SHIPPING FEVER

Shipping fever in cattle, which a few state officials still erroneously report as H.S., was once supposed to be one form of the disease (*see* "Animal Diseases," 1956 Yearbook, U.S.D.A., p. 255). The primary etiological factor in shipping fever has not been determined but a virus has long been suspected.

An article on enzootic pneumonia in calves on page 187 of this issue indicates that a virus may have finally been implicated. Much credit is due to Carter and his colleagues for their efforts to find the primary cause of shipping fever. They have not readily given up the Pasteurella infection theory.

ASIAN PASTEURELLOSIS

In a previous article (*Am. J. Vet. Res.*, April, 1957, p. 437), Carter stated "The term hemorrhagic septicemia has been used ... to designate an acute systemic Pasteurella infection ... in East Asia [which] does not appear to have occurred in North America as an epizootic disease in recent years" (may we add—*if ever*). In typing bovine strains of *Past. multocida* from all parts of the world, he found that the pathogenic serological type B was recovered "... for the most part from cattle in tropical countries." He did not find it in strains originating on this continent.

VIRUS PNEUMONIA OF CATTLE?

The article in this issue states that "*Pasteurella multocida* was recovered from 12 of 31 pneumonic lungs ...." found in apparently normal calves at abattoirs. Also that "The lesions infected with *Past. multocida* gave evidence of a severe reaction ... as opposed to the less severely inflamed nonbacterial lesions." The resemblance of the latter to lesions in virus pneumonia of pigs, and in other species, is mentioned. The article also states that "... no doubt many of the cattle that develop shipping fever are affected with enzootic pneumonia ... [and that] successful transmission of this pneumonia to calves has been carried out with *filtered* and unfiltered material."

This may not herald the final success of the half century search for the primary etiological factor in shipping fever but it is an encouraging step.

IN RETROSPECT

We should not forget that "swine plague," an obsolete name for a chronic pneumonia, was long considered to be caused by Pasteurella infection but now would seem to have been primarily a virus infection.

Nor should we forget that *cornstalk disease* of cattle, which proved to be a toxicosis, was once considered to be H. S. and that it provided the typical clinical picture and the classical lesions long accepted as those of the septicemic form of H. S. The Pasteurella were supposed to be dormant until some factor (the term "stress" was not used then), such as eating too many dry cornstalks, lowered the resistance of the animal. The organism was then credited with a spontaneous increase in virulence, resulting in quick death plus spread of the infection to other animals.

This hypothesis was erroneously accepted for many years. Could it be that the hypothesis regarding the spontaneous appearance of the Asian pasteurellosis might also be wrong?—W. A. A.

ABSTRACTS

Effects of DDD on Adrenal Glands in Calves

Holstein-Friesian dairy calves (11) were subjected to oral administration of 1, 1-dichloro-2, 2-bis (p-chlorophenyl) ethane (DDD) at a dosage of 50 mg. per kilogram of body weight per day for periods of three days to 12 weeks. From external appearances, adverse physiological effects were not noticed in any of the animals during the course of treatment.

In calves which were given DDD for 7.5 to 12.0 weeks, however, the daily feed intake was increased to the extent where it caused abnormal ruminal distention.

Cytological and cytochemical studies of the adrenal cortices of calves which were given DDD for three to 15 days indicated that this compound exerted a cytopathogenic effect on cells of the inner portions of the zona fasciculata and the zona reticularis, which eventually terminated in massive parenchymatous degeneration and interstitial tissue replacement in the affected areas. A prominent feature of this process was the accumulation of large amounts of oil red O-stainable material in coarse droplet form, of cholesteral-positive material, and the presence of large numbers of extracellular acicular birefringent crystals.—[*A. F. Weber, J. T. Bell, and A. F. Sellers: Studies of the Bovine Adrenal Gland. II. The Histological and Cytochemical Effects of the Administration of 1, 1-Dichloro-2, 2-Bis (P-Chlorophenyl) Ethane on the Adrenal Cortices of Dairy Calves. Am. J. Vet. Res., 19, (Jan., 1958): 51-57.*]

Prepartum Progesterone for Cows

An experiment involving 186 dairy cows was performed to determine if progesterone administration for approximately one month prior to parturition would affect the expulsion of the fetal membranes, the length of gestation, the subsequent lactation, the body temperature, and other physiological mechanisms of the cows. There were no significant differences between the treated and control groups, as measured by these criteria. The progesterone apparently produced no untoward effects in these animals.—[*L. E. McDonald and R. L. Hays: The Effects of Prepartum Administration of Progesterone to the Cow. Am. J. Vet. Res., 19, (Jan., 1958): 97-98.*]

Effectiveness of Dow ET-57 Against Nasal Botfly

A new method for the control of *Oestrus ovis* infections in sheep is reported. Twenty-eight naturally infected sheep were treated by drenching with a 50 per cent emulsifiable concentrate of 0,0-dimethyl 0-2,4,5-trichlorophenyl phosphorothioate, more commonly known as Dow ET-57 or Trolene. The dosage used was 100 mg. per kilogram of body weight. The results of the treatment were compared with those found in 28 untreated controls. One hundred per cent of the first instars in 27 of the 28 treated animals were destroyed. In the twenty-eighth animal, 116 living first instars were found. It was believed that the treatment was ineffective in this 1 animal because it had diarrhea when it was treated. A total of 1,796 first instars were found in the 28 untreated controls.

At the dosage level of 100 mg. per kilogram of body weight, no effect on the second or third instars was observed. The treatment was well tolerated by the experimental animals and no ill effects were noticed.—[*H. O. Peterson, E. M. Jones, and N. B. Cobbett: Effectiveness of Dow ET-57 (Trolene) Against the Nasal Botfly of Sheep. Am. J. Vet. Res., 19, (Jan., 1958): 132-134.*]

Mixed Foot-and-Mouth Disease Infection

The simultaneous inoculation of the tongues of cattle with three immunological types of foot-and-mouth disease virus was followed by the establishment of the type-specific infections in different parts of the tongue. In 5 of 6 animals, the subsequent course of the disease was apparently produced exclusively by virus of one type. Virus strains of two types were isolated from the same secondary lesions in the sixth animal. —[*Raymundo G. Cunha, Ivo Torturella, Janos L. Saile, and Ubiratan M. Serrão: Experimental Mixed Infection of Cattle with Foot-and-Mouth Disease Viruses. Am. J. Vet. Res., 19, (Jan., 1958): 78-83.*]

Distribution of Penicillin in Mastitic Udders

The distribution of penicillin in mastitic udders following intramammary injection was studied using S^{35}-labeled penicillin and autoradiography.

In the diseased udders investigated, the drug was usually unevenly distributed, with regions of varying sizes showing little or none. Administration either as an oil or aqueous solution gave essentially the same result. The accessibility of the tissues to the drug depended mainly upon clear passage in the milk ducts, with diffusion through the tissues being of minor importance.

It is postulated that the failure of penicillin treatment of mastitis often results from inability of the drug to reach the diseased areas.—[*Sven Ullberg, Eskil Hansson, and Hans Funke: Distribution of Penicillin in Mastitic Udders Following Intramammary Injection—An Autoradiographic Study. Am. J. Vet. Res., 19, (Jan., 1958): 84-92.*]

Antibodies of Vesicular Stomatitis Virus

Cattle usually recover from an infection with vesicular stomatitis virus within two weeks and, within a few months, may again become susceptible to inoculation. Virus-neutralizing antibodies did not disappear with the loss of refractoriness to reinfection, although the titers were sometimes reduced. The titers subsequently increased, and this fluctuation of titer of the neutralizing antibodies

continued over long periods, in cycles lasting several months.

Animals in herds exposed to infection during an epizootic of vesicular stomatitis in 1949 still possessed high neutralizing titers in 1952 and 1953 and, in a few animals, in 1957. Animals born in these herds after 1949 did not possess neutralizing titers in 1952 and 1953.

The persistence of fluctuating titers of neutralizing antibody was studied in cattle exposed to the virus. The possible mechanism of persisting immunity is discussed.—[*D. K. Sorensen, T. L. Chow, T. Kowalczyk, R. P. Hanson, and C. A. Brandly: Persistence in Cattle of Serum-Neutralizing Antibodies of Vesicular Stomatitis Virus. Am. J. Vet. Res., 19, (Jan., 1958): 74-77.*]

Effect of Vibrios on Fertility of Cattle

Catalase-negative Vibrio organisms were isolated frequently from bulls that had not been used for service but were never isolated from virgin heifers. Catalase-negative vibrios were spread infrequently from naturally infected bulls to susceptible heifers and cows by natural service. The conception rate was similar to that in Vibrio-free cattle. Furthermore, infection was of short duration in most bovine females, whereas it was persistent in bulls.

Catalase-positive vibrios were not isolated from virgin bulls and heifers, but were transmitted from an infected bull to susceptible heifers and from infected heifers to a susceptible bull. This type of Vibrio prevented conception, causing prolonged infertility, a condition frequently associated with *Vibrio fetus*.

Bulls can be infected with catalase-positive and catalase-negative vibrios simultaneously. No gross pathology or clinical manifestations were associated with vibriosis of bulls. Two antigenically different catalase-negative vibrios were isolated from naturally infected cattle.—[*A. H. Frank, J. H. Bryner, and B. Caruthers: A Comparison of the Effect of Catalase-Positive and Catalase-Negative Vibrio on the Fertility of Cattle. Am. J. Vet. Res., 19, (Jan., 1958): 108-111.*]

Vibrios in Bovine and Ovine Genital Tracts

On the basis of the colonial and cellular characteristics of the parent culture and dissociation pattern in successive generations, 19 *Vibrio fetus* and other Vibrio strains of bovine and ovine origin were classified into six groups. The evidence presented indicates the *in vivo* existence of two *V. fetus* colonial types with concomitant cellular and antigenic characteristics.

Hydrogen sulfide-positive and catalase-negative "saprophytic" Vibrio strains of bovine origin were distinguished from *V. fetus* strains on the basis of their colonial characteristics. Similar differences in colonial characteristics were not demonstrated in saprophytic strains of ovine origin. A saprophytic Vibrio strain of bovine origin shared heat-stable antigens with *V. fetus* strains originally isolated in cut-glass and smooth colonial form, on the basis of specific rabbit antiserums.

Serum agglutinins of a cow which aborted were detected, during the six-month period after abortion, with formolized and heated antigens of a saprophytic Vibrio strain and heated but nonformolized antigen of homologous *V. fetus* strain. —[*M. Ristic, F. H. White, and R. B. Doty: Morphological and Serological Characteristics of Fresh Isolates of Vibrio Fetus and Other Vibrios Inhabiting the Bovine and Ovine Genital Tracts. Am. J. Vet. Res., 19, (Jan., 1958): 99-107.*]

The Eructation Reflex in Sheep

Fifty sheep were used in a series of acute experiments designed to study the innervation of the esophagus and its sphincters. In general, decerebration was performed and the studies were made as soon as anesthetic effects had subsided.

The pharyngoesophageal nerves supplied motor fibers to the cervical esophagus and the cranial sphincter of the esophagus. The recurrent laryngeal nerves supplied motor fibers to that part of the esophagus dorsal to the heart and extending to the thoracic inlet, or a short distance up the cervical esophagus. The dorsal (thoracic) vagus supplied motor fibers to the terminal part of the esophagus and to the cardia. The general behavior of the exposed esophagus during eructation was similar to that reported previously in cinefluorographic studies.

Receptors were demonstrated in a relatively small area around the cardia which, when stimulated by distending this area with gas, caused active eructation. Receptors were demonstrated in approximately the same area which, when stimulated by flooding the cardia area with water, ingesta, or mineral oil, caused reflex inhibition of eructation. The inhibition was partial or complete, depending on the ability, or inability, of the cardia to partially clear itself. A 1 per cent solution of butyn sulfate placed in the cranial part of the rumen and in the reticulum blocked the inhibitory influence of water or ingesta covering the cardia. The anatomy of the areas studied is described and illustrated.—[*R. W. Dougherty, R. E. Habel, and H. E. Bond: Esophageal Innervation and the Eructation Reflex in Sheep. Am. J. Vet. Res., 19, (Jan., 1958): 115-128.*]

Feline Infectious Anemia

Feline infectious anemia is an acute or chronic blood parasite disease characterized by emaciation, depression, anorexia, and a high initial temperature, with rapid development of a macrocytic, hemolytic anemia which produces a characteristic blood picture.

Data on 30 clinical cases are reported. The etiological agent is a member of the genus Haemobartonella. The specific name, *Haemobartonella felis*, is proposed. The organisms appear as small cocci or rods on the erythrocytes of Giemsa- or

Wright-stained blood smears. The organisms are not always visible in peripheral blood smears. They may be present for a day or two, then disappear for a few days, and reappear.

Diagnosis is based on many factors which are not pathognomonic. Appearance of organisms on erythrocytes is diagnostic, but their absence does not warrant rejection of the diagnosis of feline infectious anemia. A hemoglobin of 7 Gm./100 ml. or less indicates the possibility of feline infectious anemia being the cause of the anemia.

The method of transmission has not been determined. The mortality rate varies greatly. Many cats apparently overcome initial infections and become latent carriers of the disease. Stress conditions presumably produce acute relapses in some carriers. Blood transfusions are of great value in maintaining the patient; injectable arsenicals and broad spectrum antibiotics offer the best known method of treatment.—*[Jean C. Flint, Martin H. Roepke, and Rue Jensen: Feline Infectious Anemia. I. Clinical Aspects. Am. J. Vet. Res., 19, (Jan., 1958): 164-168.]*

Distemper Virus from a Raccoon

A virus isolated from a wild, sick raccoon was identified as distemper virus. Identification was based on serum neutralization, transmission, the character of disease produced in ferrets and mink, and cross immunity. The strain of virus was adapted to the chorioallantoic membranes of embryonating chicken eggs, where it was propagated for over 40 passages. The egg-adapted virus was immunogenic, but avirulent, for both ferrets and mink.—*[Edward Crook and S. H. McNutt: Egg-Adaptation of a Strain of Distemper Virus Isolated from a Raccoon. Am. J. Vet. Res., 19, (Jan., 1958): 223-224.]*

BOOKS AND REPORTS

Helminths and Helminthiasis of Swine

Helminthiasis in swine has always been an important economic problem in many countries. This publication discusses this question from a morphological, diagnostic, and control point of view. A chapter is devoted to various pathological conditions caused by helminths in the digestive tract, liver, pancreas, kidneys, peritoneum, lungs, blood vessels, and eyes.

A special part of the publication deals with larvae of helminths as the cause of specific disorders.

This publication is a good contribution to swine management. It is clearly written in all details. The numerous illustrations helpfully supplement the text. It is a good source of information for students and practitioners of veterinary medicine. —*[Helminths and Helminthiasis of Swine. By C. E. W. Sprehn. 174 pages; 114 illustrations. Gustav Fischer, Jena, Germany. 1957. Price about $3.00.]* —FRANK KRAL.

Textbook of Meat Inspection

The author of this book has succeeded, in his third edition, in bringing together in one textbook a vast amount of information useful to veterinarians engaged in meat hygiene. He has attempted in one book to develop the subject to satisfy people representing nearly all levels of economic and cultural development. In doing so, it has been necessary to make certain compromises that would be unacceptable to the American consumer. The author has had wide experience in the development of meat hygiene programs in underdeveloped countries and has recognized the importance of eliminating those products that might transmit disease to consumers or to cause food poisoning. The adulteration of meat products with materials of lesser value is, however, not stressed.

The section on bacteriology of meat provides a sound basis for high standards of cleanliness, but some of the discussions on facilities and procedures fail to take full advantage of this information. Developments in the United States in this regard were apparently not understood by the author.

The section previously devoted to the inspection of fish was not included in this edition. The coverage of poultry inspection is treated superficially and the dispositions recommended do not meet the standards set for poultry inspection in this country.

While the textbook does not in all respects reflect meat hygiene standards in the United States, it will serve a useful purpose as collateral reading and in developing an understanding of attitudes in other countries.—*[Textbook of Meat Inspection Including the Inspection of Rabbits and Poultry. By Horace Thornton. 3rd ed. 592 pages; 259 illustrations, including 24 in color. Bailliere, Tyndall and Cox, 7 and 8 Henrietta St., W.C. 2, London, England. 1957. Price not given.]*—C. H. PALS.

Postmortem Examination of Domestic Animals

The eighth edition of this publication deals with practical description and explanation of the technique of the postmortem examination of horses, cattle, swine, dogs, cats, rabbits, and poultry.

Further chapters describe how the material from animals should be taken and shipped for histological examination, and how the postmortem examination of poisoned animals should be performed. There is a good example of how the findings should be recorded in a case report.

The final chapters are devoted to the estimation of the age of horses, cattle, pigs, and dogs and to the weight and size of normal internal organs.

The text has been distinctly written and well illustrated. It should serve as an instructive and practical aid for veterinary students and practitioners.—*[Direction for the Postmortem Examination of Domestic Animals. By J. Dobberstein. 8th ed. 125 pages; 39 illustrations; 4 tables. Paul Parey, Berlin, Hamburg, Germany. 1957. Price about $3.50.]*—FRANK KRAL.

THE NEWS

Equine Practitioners Association Reports Growth and Progress

Marked interest in its program and a healthy growth in membership were reported to the American Association of Equine Practitioners by its president, Dr. Horace N. Davis, Lexington, Ky., at the third annual meeting in Chicago, Dec. 16-17, 1957 (*see* program in the JOURNAL, Dec. 1, 1957, p. 534). Over 200 were in attendance, of whom about 150 were veterinarians compared to 44 at the first meeting in 1955 and 87 veterinarians in 1956.

Dr. Davis said that A.A.E.P. now has 205 members and that the two primary aims of the association, *i.e.*, dissemination of information to members and improved relationships between equine practitioners and other segments of the racing industry, were being realized, the first through the association's proceedings book, and the second by attendance of A.A.E.P. officers and representatives at meetings of racing commissioners, the Jockey Club, and other Thoroughbred-racing groups. These have brought about a much better understanding of the work and responsibilities of race-track veterinarians and other equine practitioners by various segments of the horse-racing industry.

The program of the meeting included a number of technical papers and general topics. Among the latter were talks by AVMA President W. W. Armistead, and Marshall Cassidy, director of racing for the Greater New York Association and executive secretary of the Jockey Club. Dr. Armistead stressed the need for better relationships and understanding of common problems between veterinarians and groups outside the profession, especially in certain areas of horse racing where misunderstandings may exist.

Mr. Cassidy spoke of the early attempts of horsemen to improve the natural performance of racing animals by one means or another, the gradual development of means to detect stimulation, the rules designed to prevent such practices, the responsibility of all those connected with horse racing to safeguard its integrity and welfare, and the contributions which veterinary science and surgery have made and can make to racing.

At the final session, the new officers of A.A.E.P. for 1958 were installed: Dr. E. A. Churchill, Centreville, Md., president; Dr. T. E. Dunkin, Chicago, secretary-treasurer; Dr. M. L. Scott, Akron, Ohio, executive secretary. Brig. Gen. W. O. Kester (Ret.), Bethesda, Md., was chosen as president-elect.

It was decided to hold the 1958 annual meeting in Chicago, the tentative dates being December 15-16.

American Board of Laboratory Animal Medicine Brochure Available

The American Board of Laboratory Animal Medicine, which was established Feb. 18, 1957, to encourage education, training, and research in laboratory animal medicine, has issued a printed brochure on the Board and the requirements for membership. It may be obtained from Dr. Robert J. Flynn, secretary-treasurer, American Board of Laboratory Animal Medicine, Argonne National Laboratory, P. O. Box 299, Lemont, Ill.

The three categories of membership are: charter fellows, fellows, and associate memberships. The requirements for Board examination and certification are contained in the brochure.

Veterinary Titles Requested by Librarian

Mr. Walter L. Necker, special assignments librarian of the Gary Public Library, Gary, Ind., is compiling a list of American veterinary books published before 1851. The 75 items listed by Merillat and Campbell in "Veterinary Military History" have been increased to over 200, many of them thus far known only by single copies. Mr. Necker is interested in a census of this scarce and ephemeral literature, and would like to hear from any collector of this type of material.

He emphasizes the fact that, even though someone may only have one or two titles, these are apt to be of special interest and may be unlisted. Within the week, he received a listing of two titles from a cooperating librarian, who hesitatingly sent them, only to find one of the items apparently unique and unknown to bibliographers. If a listing of titles owned by any member is too much trouble, Mr. Necker would be grateful merely for information as to the presence of a private collection of early veterinary books published in North and South America.

Training Program for Steroid Biochemistry

Applications are being accepted for the third course in the training program for steroid biochemistry which will begin Oct. 1, 1958. This program is sponsored by the National Cancer Institute of the National Institutes of Health.

It is conducted by personnel at the Worcester Foundation for Experimental Biology, with the Department of Chemistry, Clark University, Worcester, Mass., and the Department of Biochemistry, College of Medicine, University of Utah, Salt Lake City.

Two groups of candidates will be selected for training. Postdoctoral candidates with an M.D. or a Ph.D. degree will receive $5,000 for a one-year training period from Oct. 1, 1958, through Sept. 31, 1959. The course will consist of labora-

A limited number of appointments are now available as first lieutenants in the Army Veterinary Corps. Those authorized must be placed on active duty prior to June 30, 1958, and serve minimum period of two years.

tory instruction and lectures on the theoretical and practical aspects of steroid research, and a period of research on a steroid problem with an established investigator.

Candidates having a B.S. or M.S. degree or equivalent training will receive $1,500 for a six-month period from Oct. 1, 1958, through March 31, 1959. The predoctoral program is intended to provide competency in the analysis of steroid substances for research and clinical laboratories.

The closing date for applications is June 1, 1958. Requests for applications should be made to the Training Program for Steroid Biochemistry, Clark University, Worcester, Mass., or Dr. Kristen Eik-Nes, College of Medicine, University of Utah, Salt Lake City.

"Hemo the Magnificent" to Be Televised Again

The TV program, "Hemo the Magnificent," the Bell System Science Series on blood and its circulation, will be shown again Sunday afternoon, March 16, 1958, over the NBC network. It was shown for the first time in March, 1957.

Among the parts of the program which are of special interest to veterinarians is the section on photomicrography of the actual flow of blood in hamsters.

AMONG THE STATES AND PROVINCES

California

Dr. Ommert New President of Southern California V.M.A.—Dr. Willard D. Ommert was installed as president of the Southern California V.M.A. at the annual dinner on Jan. 11, 1958, at the Beverly Hilton Hotel.

Dr. Willard D. Ommert

Dr. Ommert, a native of Oakland, graduated from the School of Veterinary Medicine, Texas A. & M. College, in 1943. He lives in Hollydale where he has a successful large animal practice. As president of the S.C.V.M.A., he will head the largest local veterinary group in this country, with a membership of more than 350.

During World War II, Dr. Ommert served with the Army Veterinary Corps with the rank of captain.

Kansas

Kenneth D. Weide Wins Borden Scholarship Award.—The Borden Scholarship Award of $300, given annually to the veterinary student having the highest scholastic grades at the end of the sixth semester for the current year, has been won by Kenneth D. Weide, Bern, Kan., with a scholastic rating of 2.910. This high rating means that his grades very nearly approached an "A" average.

The Borden Scholarship Awards were established in 1945, only one award to be given in each approved veterinary school during a calendar year. There were only ten accredited schools when these scholarships were initiated in 1945 but all of the 17 accredited schools now participate in these awards.

Massachusetts

Hospital Toured by First Graders.—A tour of an animal hospital is an ideal introduction to the profession for young people. Dr. Joe Fabricotti, Westboro, Mass., invited 60 first graders to visit his animal hospital with their teacher early last June.

Dr. Fabricotti took the pupils through in groups and described some of the work being done. Mrs. Fabricotti served coffee to the adults and soft drinks to the children. As a part of a class project, the children had collected blankets for the hospital, and pennies to buy a gift for the consultation room.

The principal of the school felt that the tour gave the children a real insight into the veterinary profession.—*South Carolina Veterinarian.*

Nebraska

Women's Auxiliary Meeting.—The Women's Auxiliary to the Nebraska State Veterinary Medical Association held its annual meeting at the Cornhusker Hotel, Lincoln, Neb., on Dec. 3-4, 1957, with Mrs. J. H. Magilton, David City, presiding.

The auxiliary voted to contribute $50 to the AVMA Research Fund and $25 to the Loan, Award, and General funds.

Several radio stations in Nebraska are using the prepared scripts to bring news of the veterinary profession to their listeners. An interesting report of the AVMA meeting in Cleveland was given by Mrs. G. H. Leenerts of Humphrey, delegate to that convention.

Mrs. Magilton welcomed three guests of the

Guests and New Officers

In the front row are the guests at the December, 1957, meeting of the Nebraska Auxiliary—Mrs. E. E. Leasure (left), Mrs. E. A. Woelffer, and Mrs. Wayne Riser.

In the back row are the new officers of the Nebraska Auxiliary—Mrs. R. A. Claybaker (left), secretary-treasurer; Mrs. E. J. Metcalf, president; and Mrs. N. W. Kruse, vice-president.

AVMA Auxiliary: Mrs. E. A. Woelffer, president-elect; Mrs. E. E. Leasure, Manhattan, Kan., president; and Mrs. Wayne Riser, editor of the AVMA Women's *Auxiliary News*. Mrs. Woelffer and Mrs. Leasure presented a skit showing the relationship of the AVMA Auxiliary to the state association auxiliary. The importance of the Student Loan Fund was stressed by Mrs. Leasure.

Wednesday evening the ladies joined their husbands at the annual banquet held in the ballroom of the hotel.

Officers elected for the year were: Mrs. E. L. Metcalf, DeWitt, president; Mrs. N. W. Kruse, Genoa, vice-president; and Mrs. R. A. Claybaker, Chester, secretary-treasurer.

s/MRS. MILO L. JOHNSON, *Publicity Chairman.*

New York

Fiftieth Annual Conference at Cornell University.—The fiftieth annual conference for veterinarians was held Jan. 8-10, 1958, at the New York State Veterinary College, Cornell University, Ithaca.

Those participating in the program were:

Drs. James H. Gillespie, professor of Bacteriology, New York State Veterinary College—Distemper Immunization of Hand-Raised Puppies; Dr. James A. Baker, director, Veterinary Virus Institute, New York State Veterinary College—Dual Vaccination for Canine Distemper and Infectious Canine Hepatitis; Malcolm E. Miller, head, Department of Anatomy—Structural Facts of Clinical Value.

Drs. Joseph H. Gans, professor, Veterinary Pharmacology—Pharmacology of Preanesthetic Agents; Dr. Jack O. Knowles, practitioner, Miami, Fla.—Newer Practical Procedures of Anesthesia; Simple Hospital Procedures; Robert W. Kirk, professor, Small Animal Diseases and Therapeutics, New York State Veterinary College—Postanesthetic Care; Harmon C. Leonard, practitioner, Cheshire, Conn.—Respiratory Distress in Brachiocephalic Dogs.

Drs. S. F. Scheidy, veterinary medical director, Smith, Kline, and French—Tranquilizing Drugs in Veterinary Practice; David K. Detweiler, School of Veterinary Medicine, University of Pennsylvania—Uses and Limitations of Electrocardiography in the Diagnosis of Heart Disease in Animals; Richard H. Barnes, professor of Nutrition, and dean of the Graduate School of Nutrition, Cornell University—Fat Nutrition and Blood Cholesterol.

Drs. Donald D. Delahanty, professor, Veterinary Surgery, New York State Veterinary College—Fractures or Defects of the Fibula; George C. Poppensiek, acting-in-charge, Plum Island Disease Laboratory, Greenport, L. I.—What Plum Island Is Doing in Research; Peter Olafson, head, Department of Pathology and Bacteriology, New York State Veterinary College—Virus Diarrhea and Similar Diseases of Cattle; John K. Bosshart, practitioner, Camden, N. Y.—The Challenge of Field Surgery; Kenneth McEntee, professor of Pathology, and Wm. C. Wagner, field veterinarian, Department of Pathology and Bacteriology, New York State Veterinary College—Cystic Corpora Lutea in Cattle; Guy E. Morse, Department of Medicine and Obstetrics, New York State Veterinary College—What Is Mastitis Control?

At the conference dinner on January 9, the presentation of a portrait of Dean William A. Hagan was made on behalf of the Alumni Association of the New York State Veterinary College by Dr. William F. Stack. The portrait was accepted for the University by President Deane W. Malott (*see* editorial in the February 15 JOURNAL, page 178).

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Dr. Gans Named Professor of Veterinary Pharmacology at Veterinary College.—Dr. Joseph H. Gans (UP '46) has been named professor of veterinary pharmacology at the New York State Veterinary College, Cornell University, Ithaca.

Before joining the Cornell faculty, he was a laboratory and conference instructor at Jefferson Medical College, Philadelphia, where he completed requirements for the Ph.D. degree. Practicing for several years in Plainville, Conn., and Elkins Park, Pa., Dr. Gans also has done research on the secretion of bile under various

hormonal influences, and the physiology of gastric secretions.

Dr. Gans is a member of the AVMA, the Philadelphia Physiological Society, and the American Association for the Advancement of Science.

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New York City V.M.A.—The regular meeting of the Veterinary Medical Association of New York City, Inc., was held on the evening of Jan. 15, 1958, at the New York Academy of Sciences, New York City.

Dr. Roscoe P. Kandle, deputy commissioner of health, New York City, spoke on "The Function of the Health Department and the Practicing Veterinarian," and Dr. Victor Cobasso, virologist, Research Division, American Cyanamid Co., discussed the "Use of Tissue Culture in Virus Problems."

Ohio

State Association Elects New Officers.—The new officers elected by the Ohio State V.M.A. at its annual meeting in Cincinnati, Jan. 8-10, are: Drs. J. A. McCoy, Sr., Washington Court House, president; C. D. Barrett, Akron, president-elect; R. L. Rudy, Columbus, vice-president; R. L. Knudson, Columbus, secretary; J. H. Helwig, Columbus, treasurer. Drs. A. G. Madden, Jr., Madeira, and B. W. Kagy, Tiffin, were elected delegate and alternate, respectively, to the AVMA House of Representatives.

s/HARRY C. SHARP, *Executive Secretary.*

Pennsylvania

Fifty-Eighth Annual Conference Held at the University of Pennsylvania.—A wide range of animal diseases, many of which also afflict man, was explored at the fifty-eighth annual conference of veterinarians held on Jan. 7-8, 1958, under the sponsorship of the School of Veterinary Medicine, University of Pennsylvania. More than 400 veterinarians attended.

At the opening session, a new means of identifying disease in tissue cultures was presented by Dr. Geoffrey Rake, professor of Microbiology and Veterinary Medicine at the Wistar Institute. Also, new developments in treating foot-and-mouth disease were presented by Dr. George C. Poppensiek of the U.S.D.A.'s Animal Disease Laboratory on Plum Island, N. Y.

Other highlights of the four sessions included Dr. C. Lawrence Blakely, director of Surgery at the Angell Memorial Animal Hospital in Boston, speaking on "Maintenance of Respiration During Chest Surgery," and Dr. James E. Prier, manager of the Biological Development Department, Merck, Sharp & Dohme, discussing "Cat Scratch Fever in Man."

Other speakers included Drs. E. Wynn Jones, College of Veterinary Medicine, Oklahoma State University; P. P. Levine, New York State Veterinary College; Jean Holzworth, the Angell Memorial Animal Hospital, Boston; Frank Bloom, practitioner in Flushing, N. Y.; and William P. Switzer, Veterinary Medical Research Institute, Ames, Iowa.

The following speakers from the faculty of the School of Veterinary Medicine, University of Pennsylvania, appeared on the program: Drs. James E. Eckenhoff, Harry W. Martin, James V. McCahon, Robert S. Brodey, Klaus Hubben, Jacques Jenny, and William H. Rhodes.

The chairman of the conference program committee was Dr. James H. Mark, associate professor of veterinary medicine, School of Veterinary Medicine, University of Pennsylvania.

Texas

Dr. Grumbles Appointed Head of Department of Microbiology.—Dr. Leland C. Grumbles (TEX '45), on Nov. 1, 1957, was appointed head of the Department of Veterinary Microbiology at the School of Veterinary Medicine, A. & M. College of Texas.

Dr. Leland C. Grumbles

After receiving his D.V.M. degree, Dr. Grumbles did graduate work in bacteriology at Rhode Island State College under the late Dr. John P. Delaplane. He spent a year in practice and then joined the staff of the Department of Veterinary Science at Rhode Island State College in 1947. In 1948, he was assistant professor in the Department of Veterinary Science at Louisiana State University. He returned to Texas A. & M. College in 1949

and has been on the staff since that time. Granted military leave to serve with the Veterinary Corps, U.S. Air Force, he spent most of this time in Alaska, where he did research in diseases transmissible from animals to man.

In association with Dr. Delaplane, Dr. Grumbles did extensive research on diseases of poultry and is nationally recognized for his contributions to the understanding of virus diseases in turkeys and chickens. He will continue with this work.

Wisconsin

Annual Meeting of Wisconsin V.M.A.—The forty-second annual meeting of the Wisconsin V.M.A. was held Feb. 10-12, 1958, at the Pfister Hotel in Milwaukee.

A business practice panel, moderated by Dr. L. H. Winn of Whitewater, opened the Monday afternoon program. Those participating in the panel were Drs. A. C. Kelman, Waterloo; E. A. Krueger, Evansville; W. L. Lynn, Franksville; and R. L. Oettiker, Marshfield.

Drs. W. B. Kingrey, Ames, Iowa, and Kenneth Lloyd, West Bend, Wis., discussed bovine and swine surgery, and teat surgery on the farm, respectively. The veterinarian and his investments was covered by Mr. Robert M. Witt, of Jamieson & Co. (investment house), Minneapolis, Minn.

The following speakers also participated in the program: Drs. George Ott, Grafton, Wis.—Are Sensitivity Tests Useful in Practice?; Harvey Hoyt, St. Paul, Minn.—Mastitis for the Practitioner; C. C. Ellis, Madison, Wis.—Vaccinating Poultry.

Drs. Earl M. Baldwin, Jr., Omaha, Neb.—Clostridial Enterotoxemia; Arthur A. Case, Columbia, Mo.—Nitrate Poisonings; Sheep Practice; G. R. Hartsough, Pittsville, Wis.—Common Mink Diseases—Illustrated; W. W. Armistead, East Lansing, Mich., president of the AVMA—Tips on Practice Promotion.

Drs. H. O. Peterson, Albuquerque, N. Mex.—Control of Ectoparasites of Livestock; Pierre A. Chaloux, Valley City, N. Dak.—Tuberculosis Eradication as a Goal; C. K. Mingle, U.S.D.A., Washington, D.C.—Brucellosis Eradication, Past, Present, and Future; A. A. Erdman, Madison—Summary of New BRT Technique; Carl Olson, Jr., Madison—What University Research Is Doing for You.

In the Small Animal Section, a "slide talk," entitled "A Trip Through the Hospital," was given by Dr. Norman L. McBride, Pasadena, Calif. Dr. Alan Bachrach, Philadelphia, Pa., spoke on common pulmonary and digestive disorders of birds. Dr. F. L. Gentile, Milwaukee, moderated a panel on distemper. The participants on the panel were Drs. C. J. Gurneau, of Kenosha; G. J. Marold, of Milwaukee; Paul Neff of Sheboygan; and R. H. Romaker, of Madison.

Dr. W. W. Armistead was the guest speaker at the banquet held on Tuesday evening. His subject was "You Are the AVMA." Dr. Alan Bachrach of Philadelphia provided fun and entertainment with his address, "Humorous Prestidigitation and Mystifying Mind Reading."

Mr. Brian Forster, director of AVMA Public Relations, spoke Friday morning on the teamwork required in veterinary public relations. Dr. Armistead gave an illustrated talk on practical veterinary plastic surgery, and Dr. U. M. Krier of Milwaukee discussed the legal liability of veterinarians. Dr. H. H. Hoyt concluded the program with an illustrated talk on disease conditions observed at the Minnesota (university) clinic.

Wyoming

Wyoming V.M.A. Opposes Employing Lay Bleeders.—In a special meeting at Casper, Dec. 29, 1957, the Wyoming Veterinary Medical Association opposed the use of lay bleeders by the ARS in the state brucellosis-eradication program. Wyoming is primarily a range state and, as such, its cattle are available for blood-testing for only a few months—the time between coming off the range in the fall and calving in late winter. Fremont County stockmen had recently petitioned to establish a modified accredited brucellosis-free area. To include the large number of cattle already tested in the area, the 24 months allowed Wyoming was thus decreased by a year. Previously, funds were available for testing petitioning areas but, with a changeover to the county as the smallest acceptable unit, these funds were held up at a time when cattle were available for testing.

Recently, this (Fremont) county lost one of its three practitioners to the Army, and the area also lacked an ARS veterinarian for a time. With estimates of 20,000 to 40,000 cattle yet to be tested in the short time left before calving and next fall, when the cattle come off the range, and the December, 1958, deadline, the ARS, with the approval of the Wyoming Livestock Sanitary Board, hired two lay bleeders.

The association, by a roll call vote, opposed the use of lay bleeders. This stand was taken on the basis that this was encroaching on the principles and rights of veterinarians, with eventual detriment to the livestock industry. The Wyoming practice act was cited as making such employment illegal. At a time when public relations are being stressed, utilization of laymen for the field work of the much publicized brucellosis program would undo much of the work accomplished. This situation also was not felt to be a valid emergency requiring such measures, for certainly changes in brucellosis-program policies could bring about a similar situation in many areas of the state.

The association further moved that, "in a spirit of cooperation and with concern for the

safety of Wyoming's livestock, the Wyoming V.M.A. hereby goes on record as opposed to the use of nonprofessional aid in place of veterinarians in the regulatory programs of the ARS applied to the State of Wyoming and specifically in the accelerated brucellosis program" and, further, that the association, "request the ARS to remove their two lay bleeders from Fremont County immediately."

It was voiced that, while Wyoming veterinarians were anxious to do their part in eradicating brucellosis, it was asking too much of the practitioners to keep pace with the publicity campaign unless a good deal of foresight went into its administration. With the understanding that the lay bleeders would be dropped, 14 practitioners promised to go into Fremont County for a week if needed. One state and one federal employee were also to be assigned to the area.

To avoid repetitions of this, it was believed that federal veterinarians in the state, by delegating some of their duties such as branding and tagging of reactor cattle to practitioners, could be more efficiently used. Avoidance of change in procedure would also prevent the occurrence of such emergencies and create better understanding of the program on the part of the stockmen. Every effort to get qualified veterinarians to carry out the eradication program was also suggested.

FOREIGN NEWS

British Caribbean Association Sponsors Third Convention.—The British Caribbean Veterinary Association is sponsoring its third veterinary convention in Trinidad, B.W.I., from May 25-31, 1958. The first veterinary meeting was held in this Island in 1954, and the second in Jamaica in 1956.

The program, which promises to be highly educational, will be for the advancement of the veterinary profession and the livestock industry in these parts. Mr. Gould, president of the Royal College of Veterinary Surgeons, and Mr. Gordon Knight, both of the United Kingdom; Dr. Charles Bild, Miami, Fla.; Dr. F. J. Milne, Ontario Veterinary College, Guelph; and probably Dr. E. S. Tierkel, Atlanta, Ga., will participate in the program.

There will be two days of lectures, two days of surgical demonstration and clinics in both large and small animals, and one day of films. In addition, there will be an opportunity for excursions to places of interest in the Island.

The Russians say "See you soon in the moon" but if you are feeling sad, and want to be glad, "Land in Trinidad" (between May 25-31, 1958).

s/F. O. GONZALES, *Secretary*, and
S. P. BENNETT, *President*.

STATE BOARD EXAMINATIONS

NEW YORK—June 18, 19, 1958, practical examination, Ithaca; June 24-27, 1958, written examination, New York City, Albany, Syracuse, Buffalo, and Rochester. John W. Paige, chief, Bureau of Examinations and Registrations, 23 S. Pearl St., Albany, N.Y.

NORTH DAKOTA—April 9-10, 1958, Fargo. M. C. Hawn, secretary-treasurer, 1407 13 St. N., Fargo, N. Dak.

TEXAS—May 26-28, 1958, Texas A & M College, College Station, Texas. T. D. Weaver, executive secretary, Texas State Board Veterinary Medical Examiners, 207 Capital National Bank Bldg., Austin 16, Texas.

DEATHS

Star indicates member of AVMA

★**Walter R. Baynes** (OSU '22), 60, Raleigh, N. Car., died Nov. 3, 1957. Dr. Baynes was a member of the North Carolina V.M.A. and of the AVMA.

Harry E. Bender (UP '01), 76, Lititz, Pa., died Nov. 15, 1957, after an illness of several months.

Dr. Bender is a third generation veterinarian to service the Lititz area. His father, Dr. Weidler K. Bender, and his grandfather, Dr. John Bender, were veterinarians before him.

His brother, Dr. J. Richard Bender, and his nephew, Dr. John W. Bender, were associated with Dr. Bender in his practice at the time of his death.

He is survived by his widow, Christine, and two daughters.

James J. Cunningham (UP '25), 55, Philadelphia, Pa., died Dec. 4, 1957. Dr. Cunningham was a member of the Knights of Columbus and the Men of Medical Missions. He was also a member of the Pennsylvania, New Jersey, Massachusetts, and Keystone Veterinary Medical Associations.

He is survived by his widow, Lillian Anne, and a brother.

★**Marshall H. Gandy** (KCV '16), 71, Baton Rouge, La., died Jan. 2, 1958. After receiving his D.V.M. degree, Dr. Gandy served with the Louisiana Livestock Sanitary Board for 15 years, except for a period during World War I when he was with the Army Veterinary Corps. Dr. Gandy was active in civic and social groups in Baton Rouge. He was a thirty-second degree Mason and a long-time member of the AVMA. His widow, a son, a daughter, and five grandchildren survive.

Robert B. Grimes (KCV '05), 78, Kansas City, Kan., died Dec. 1, 1957. Dr. Grimes had

served with the U.S. Department of Agriculture for 35 years. He had retired six years ago. A daughter and three sons survive.

Walter H. Hauer (CVC '17), 68, Sidney, Ill., died Dec. 3, 1957. Dr. Hauer had served with the Army during World War I. A sister and two brothers survive him.

G. W. Little, 64, Carnegie, Okla., died Nov. 27, 1957. Dr. Little had practiced in Carnegie for 33 years. He is survived by his widow, a son, two daughters, and two grandsons.

Abraham G. Livengood (GR '06), 76, Salisburg, Pa., the oldest practicing veterinarian in Pennsylvania, died Nov. 11, 1957, after a short illness.

Dr. Livengood was a member of the Pennsylvania V.M.A. and served as school board president in 1951. He is survived by a daughter.

Bernard C. Meade (NYS '16), 68, Stamford, N.Y., died Nov. 14, 1957. Dr. Meade had worked with the U.S. Department of Agriculture prior to his retirement. His widow survives.

Frank Shickle (ONT '94), 87, Bentonville, Ark., died Dec. 2, 1957. Dr. Shickle had practiced veterinary medicine for 65 years prior to his retirement some years ago due to failing health. His widow and two daughters survive.

★**Hubert Schmidt** (BER '12), 71, College Station, Texas, died Jan. 13, 1958, as a result of injuries suffered in an automobile crash a few days previously.

Born at Comfort, Texas, in 1886, Dr. Schmidt first attended Texas A. & M. College where he earned his B.S.A. degree in 1908. He then enrolled in the Royal Veterinary School in Berlin from which he received his D.V.M. degree four years later. He had been connected with the Texas Agricultural Experiment Station since 1913 and was head of its Department of Veterinary Science from 1936 to 1956, when he retired.

Dr. Schmidt was widely known for his work in animal diseases such as tick fever, anaplasmosis, nutritional deficiencies of cattle, sore mouth in sheep and goats, and was credited with over 40 years of distinguished service to veterinary science and the livestock industry. He worked with the late Dr. Mark Francis, former dean and head of the Department of Veterinary Science at Texas A. & M., for 20 years.

Funeral services were held at Bryan on January 15.

W. C. Scholt (ISC '02), 77, Leon, Iowa, died in December, 1957, after a prolonged illness.

A veterinarian for 55 years, Dr. Scholt had practiced in Leon for 20 years. He was state veterinarian for 18 years when that position was part of the state department of agriculture. He was a member of the Iowa V.M.A. Dr. Scholt is survived by his widow, the former Bertha Smith, and two daughters.

L. E. Shay (STJ '09), 76, Atchison, Kan., died Nov. 5, 1957. A few years after graduation Dr. Shay established a veterinary hospital, but he has been in retirement for four years.

Surviving Dr. Shay are a daughter, a sister, and two grandchildren.

★**Fred W. Shinn** (ISC '14), 70, Compton, Calif., died Dec. 3, 1957. Colonel Shinn (ret.) had been a member of the AVMA for many years. He is survived by his widow and a son.

Charles A. Weber (CVC '07), 73, Womelsdorf, Pa., died Dec. 1, 1957. Dr. Weber had practiced in Zanesville, Ohio, for 42 years. He retired in 1947, and had resided in Womelsdorf since then.

T. J. Wiseman, New Albany, Miss., died Dec. 3, 1957. Prior to his retirement, Dr. Wiseman had served as mayor as well as veterinarian of Sherman, Miss. A son and a daughter survive.

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Other Deaths Reported.—The following deaths have been reported. The usual information for an obituary was not supplied.

Leonard L. Howell (COR '32), Wellsville, N.Y., died Nov. 22, 1957.

John W. Smith (KCV '09), Lebo, Kan., died Nov. 29, 1957.

Glen F. Eichhorn (IND '18), 63, Decatur, Ind., died July 13, 1957.

George N. Russel (KCV '11), 69, Wichita, Kan., died Dec. 22, 1957.

Benjamin F. Davis (KCV '07), 79, died Dec. 30, 1957.

Leopold A. Brown (ONT '89), 99, died Nov. 23, 1957.

Georges H. Rajotte (MON '21), 58, Montreal, Quebec, died Nov. 21, 1957.

Harry F. Seymer (CVC '15), 66, Milwaukee, Wis., died Nov. 21, 1957.

Dell Wright, 82, Moro, Ore., died Nov. 4, 1957.

Robert Boyd (SF '16), 77, Mill Valley, Calif., died in August, 1956.

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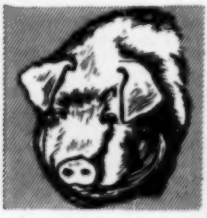

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AVMA Report—Continued from p. 15

member in that area. This could be your story or mine in any town in the country. This article is in marked contrast to some we see where some hungry practitioner boasts of his seven-minute spay job, or about his ability as a barber for poodles.

Approximately 900 new graduates enter our ranks each year. They must be absorbed; they must be made welcome; and they must have help from all of us. Good internal public relations, our ethical behavior, dictates that we must do this. As rapidly as possible, the AVMA will develop tools for this purpose, but the best tool of all is our own friendliness. This is our most fertile ground for planting ideas for the future that we shall have ethical practitioners and members in every branch of veterinary science.

Telephone listings are an example of internal public relations. Proper listings are complimentary to every member listed in any directory and to the entire profession. As members of local associations, if you are looking for an idea you can present to your local association for the good of everyone (and that includes the public), study the correct listings to be found in reports of the past ethics committees and make it a project for the coming year. I look forward to the day when we can have all of them correct all over the country.

The latest addition to the public relations program comes in the form of a little booklet, which is available from your AVMA office, to be used in your office for your clients. "To My Client" has but one thing to advertise and that is the veterinary profession. Its sponsors are you and not some commercial enterprise. It not only presents information of value to the client but also a bit of philosophy for the client, and it would be well for the doctor to read it as well.

It has been said that all good things must come to an end, but this must never happen to our public relations, both external and internal. We must not confuse publicity with public relations. Favorable publicity, which advances the public relations goals for the entire profession, is ethical, but any publicity which advances the individual is unethical.

APPLICATIONS

Applicants—Members of Constituent Associations

In accordance with paragraph (e) of Section 2, Article X, of the Administrative Bylaws, as revised at the annual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., the names of applicants residing within the jurisdictional limits of the constituent associations shall be published once in the JOURNAL.

The following applicants have been certified as members of the constituent association that has jurisdiction over the area in which the applicant resides. This certification was made by the secretary of the constituent association in accordance with paragraph (c) Section 2, Article X, of the Administrative Bylaws.

CARROLL, RAY DEAN
1813 Woodlawn, Corsicana, Texas.
D.V.M., A. & M. College of Texas, 1957.

FINK, LOUIS
Box 143, Gamboa, Canal Zone.
D.V.M., Alabama Polytechnic Institute, 1937.

BRUYNS, A. G. M.
2470 Kenwood Manor, Sioux Falls, S. Dak.
D.V.M., Ontario Veterinary College, 1932.

LEE, ROBERT E.
MSS Box 3236, Tallahassee, Fla.
D.V.M., Alabama Polytechnic Institute, 1943.

ZABIN, JAMES G.
1144 Irving Park Rd., Bensenville, Ill.
D.V.M., University of Illinois, 1954.

Graduate Applicants

The following are graduates who have recently received their veterinary degree and who have applied for AVMA membership under the provision granted in the Administrative Bylaws to members in good standing of student chapters.

First Listing

ADER, JANIS M.
2640 Alvingroom Ct., Oakland, Calif.
D.V.M., University of California, 1957.

TIPTON, JOSEPH DIXIE
1012 North Washington St., Russellville, Ala.
D.V.M., Alabama Polytechnic Institute, 1957.

RUSSELL, CLARENCE KENNETH
4310 Mildred St., Bellaire, Texas.
D.V.M., Alabama Polytechnic Institute, 1957.

COMING MEETINGS

District of Columbia Veterinary Medical Association. Annual meeting. Dart Auditorium, Armed Forces Institute of Pathology, Washington, D.C., March 11, 1958, at 8:p.m. William I. Gay, 5200 Chandler St., Bethesda, Md., secretary-treasurer.

Alabama Veterinary Medical Association. Annual meeting. Hotel Stafford, Tuscaloosa, March 16-18, 1958. McKenzie Heath, School of Veterinary Medicine, Alabama Polytechnic Institute, Auburn, secretary.

Washington, State College of. Annual Conference of Veterinarians. Pullman, Wash. April 7-9, 1958. W. R. Leader, program chairman.

Western Poultry Disease Workers Conference. Pullman, Wash., April 8, 1958. R. D. Conrad, secretary.

North Central Iowa Veterinary Medical Association. Annual meeting. Warden Hotel, Fort Dodge, Iowa, April 17, 1958. H. Engelbrecht, secretary-treasurer.

American Animal Hospital Association. Silver anniversary meeting. Drake Hotel, Chicago, Ill., April 23-26, 1958. Dr. Wayne H. Riser, secretary.

Oklahoma State University. Oklahoma conference for Veterinarians. College of Veterinary Medicine, Oklahoma State University, Stillwater, May 5-6, 1958. Lester Johnson, Department of Veterinary Medicine and Surgery, chairman.

Michigan Veterinary Medical Association. Annual meeting. Grand Hotel, Mackinaw Island, June 2-4, 1958. Charles Coy, Hillsdale, general chairman.

Texas A. & M. College. Eleventh annual Texas conference for veterinarians. School of Veterinary Medicine, Texas A. & M. College, College Station, June 5-6, 1958, R. D. Turk, chairman.

Kansas State College. Annual conference for veterinarians. School of Veterinary Medicine, Kansas State College, Manhattan, June 5-7, 1958. E. E. Leasure, dean.

Montana Veterinary Medical Association. Summer meeting. Missoula, June 16-18, 1958. G. A. Morrison, 316 Central Ave., Great Falls, Mont., secretary.

Georgia-South Carolina Veterinary Medical Association. Joint Meeting, Bon Air Hotel, Augusta, Ga., June 19-21 1958. A.M. Mills, 325 Pinecrest Drive, Athens, Ga., secretary, program committee.

Idaho and Wyoming Veterinary Medical Association. Joint meeting. Jackson Hole, Wyo., June 21-23, 1958. A. P. Schneider, 3025 N. 23rd St., Boise, Idaho, IVMA secretary; J. F. Ryff, P.O. Box 960, Laramie, Wyo., WVMA secretary.

North Carolina State Veterinary Medical Association. Fifty-seventh annual meeting. The Washington Duke Hotel, Durham, June 24-26, 1958. C. J. Lange, 3741 Hi-Point Rd., Greenboro, secretary-treasurer.

Utah Veterinary Medical Association. Annual meeting. Ogden, June 25-26, 1958. J. A. Thomas, P.O. Box 592, Provo, secretary.

Alabama Polytechnic Institute. Annual conference for veterinarians. School of Veterinary Medicine, Auburn, July 20-23, 1958. T. C. Fitzgerald, program chairman.

Canadian Veterinary Medical Association. Tenth annual Convention. Royal Alexander Hotel, Winnipeg, Manitoba. July 21-23, 1958. Claude Kealey, 1195 Wellington St., Ottawa 3, Ont., executive secretary.

New York State Veterinary Medical Society. Sixty-seventh annual meeting. Concord Hotel, Kiamesha Lake, N. Y., Sept. 10-12, 1958. Joan S. Halat, 803 Varick St., Utica, N. Y., executive secretary.

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REFERENCES: 1. Mosier, J. E.: Vet. M. 50:605 (Nov.) 1955. 2. Belloff, G. B.: Calif. Vet. 9:27 (Sept.-Oct.) 1956. 3. Pollock, S.: J. Am. Vet. M. Ass. 129:274 (Sept.) 1956.

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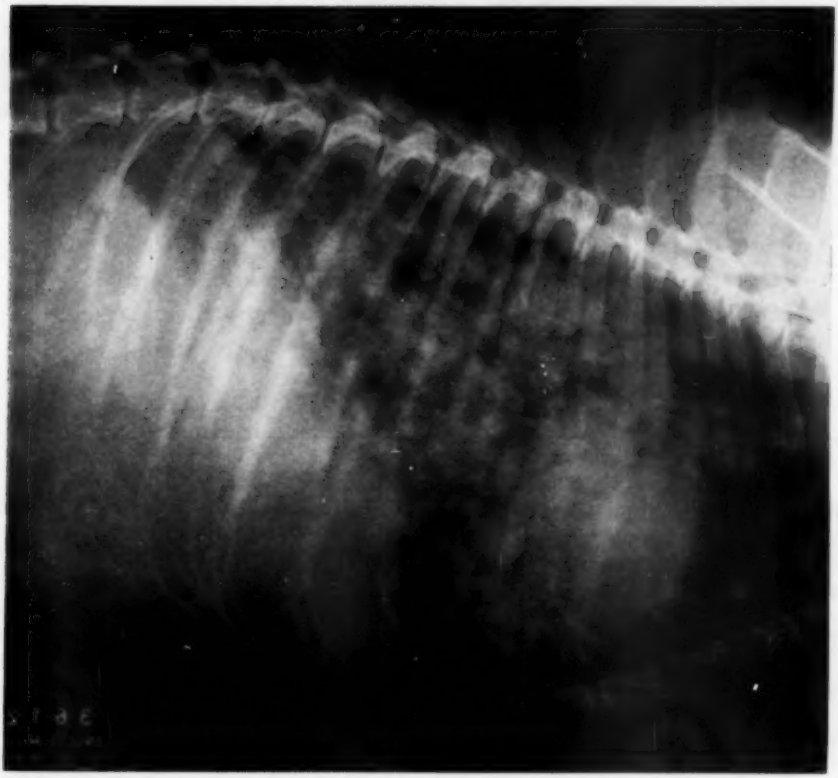

Figure 1

History.—A nonspayed, part-Collie female, 13 years old, had been coughing and dyspneic for three or four months. She would lie on her sternum, never on her side. At times, she would get up with difficulty and become panicky, probably because of anoxia. The cough was sharp and harsh. Auscultation of the chest revealed loud and distinct heart sounds with an increased vesicular murmur. Multiple tumors were present in the mammary glands.

(Diagnosis and findings are reported on next page)

Here Is the Diagnosis

(Continued from preceding page)

Diagnosis.—Excessive, diffuse mottling, "snow storm nodules," in all lung fields, probably the result of metastases of the mammary tumors, as shown in the radiograph (fig. 1) of the thorax, lateral view.

Comment.—This radiograph is of interest for two reasons: (1) It shows quite a different appearance than that usually seen in the general spread of carcinoma in the lung; and (2) it shows that a tumor can become widespread without causing death and even without markedly incapacitating the dog. The many foci in the lungs, in the presence of primary tumors, indicate possible metastatic neoplasms.

This case was presented by the staff of the Angell Memorial Animal Hospital, Boston, Mass.

Our readers are invited to submit histories, radiographs, and diagnoses of interesting cases which are suitable for publication.

Your Partner in Practice

The following excerpts from an editorial in the *New England Journal of Medicine* (Aug. 15, 1957: 337) can well be applied to the veterinary practitioner.

The physician of 1915 is characterized as "an empiric follower of tradition preoccupied with over-elaborated techniques of physical examination . . . more interested in practicing than in perfecting his art." He "often assumed a self-protective and rather arrogant remoteness . . .; and knew too little to dare to say 'I don't know.' "

Today's "better" physician "combines the clinician and the laboratory man" and is "eager to understand the basic mechanisms . . . in his patient's illness." His concern "with the whole of the complex human being" evokes "the compassion that is so necessary for good clinical care. . . . He tries to teach his patient to understand his illness . . . [and to participate] . . . not only in the management of his treatment but . . . in collection of data necessary for the analysis of his case." Thus, "a new quality of integrity has entered the relationship."

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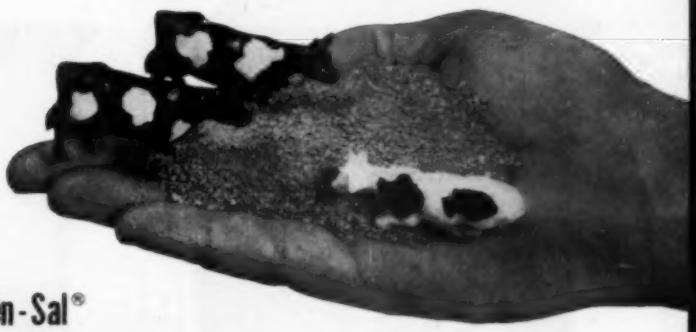

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*Vet. Med., 52, (1957): 601-605
†U.S. Pat. No. 2,772,167
[1]J. of Nutrition, 53:1, May, 1954
[2]Armour Research Foundation Report Project No. C616
[3]J. of Dairy Science, XL: 9, (1957): 1087-1092

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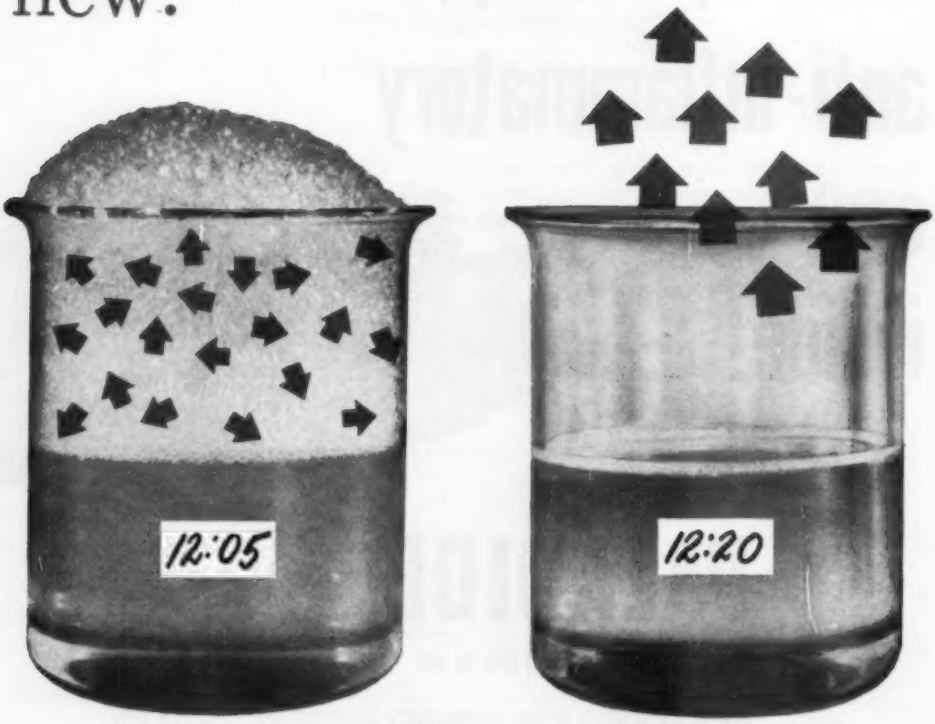

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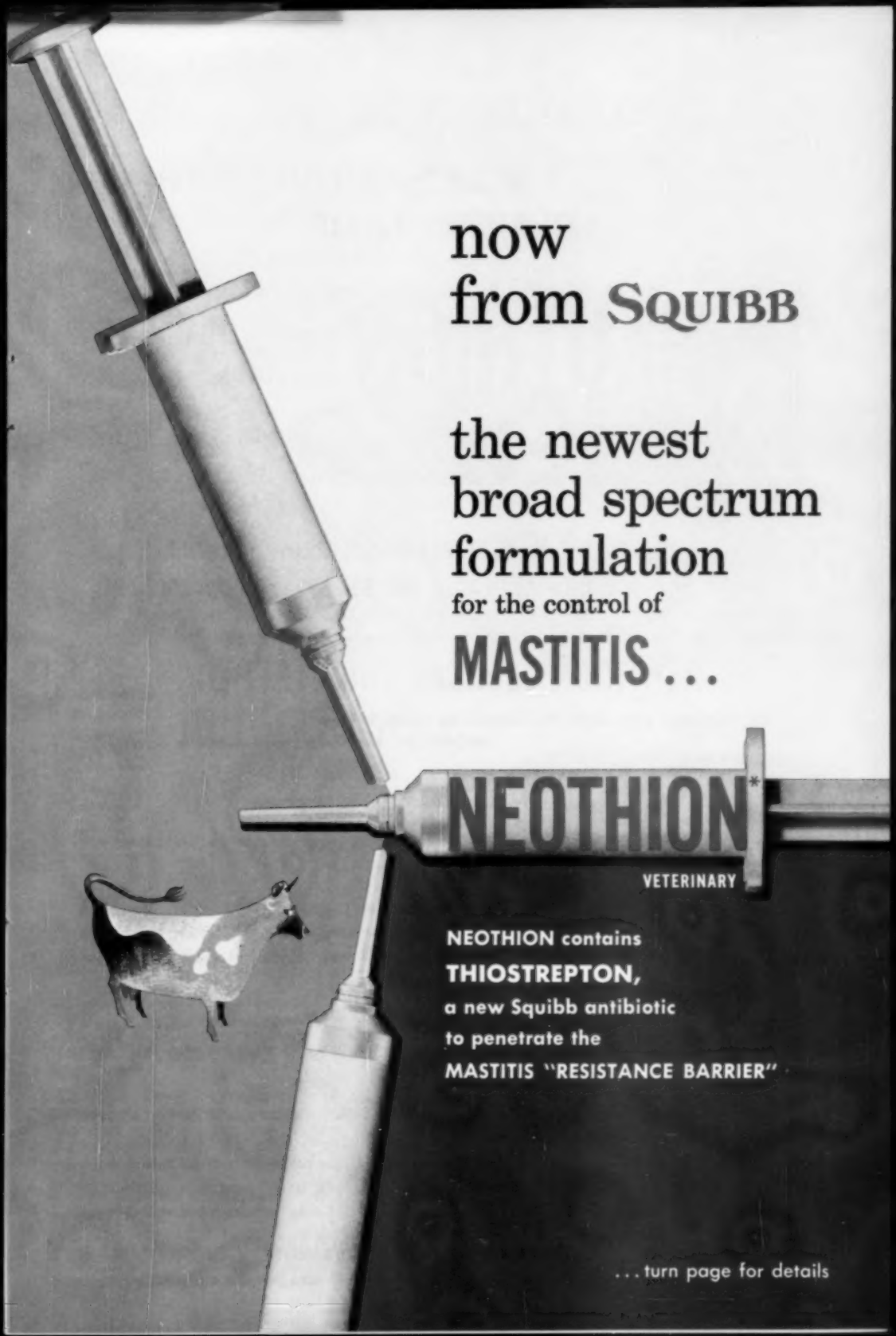
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and more resistant to them. Because of its high order of activity against these resistant bacteria, NEOTHION controls *all known types* of bacterial mastitis with greater speed and dependability. Further, because NEOTHION contains more highly effective antibiotics, a lower dosage level can be used with the full confidence that a superior treatment has been administered.

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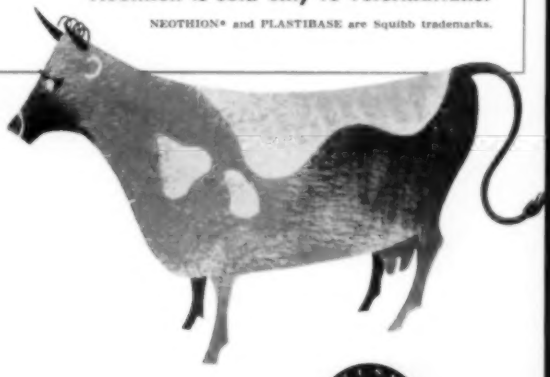

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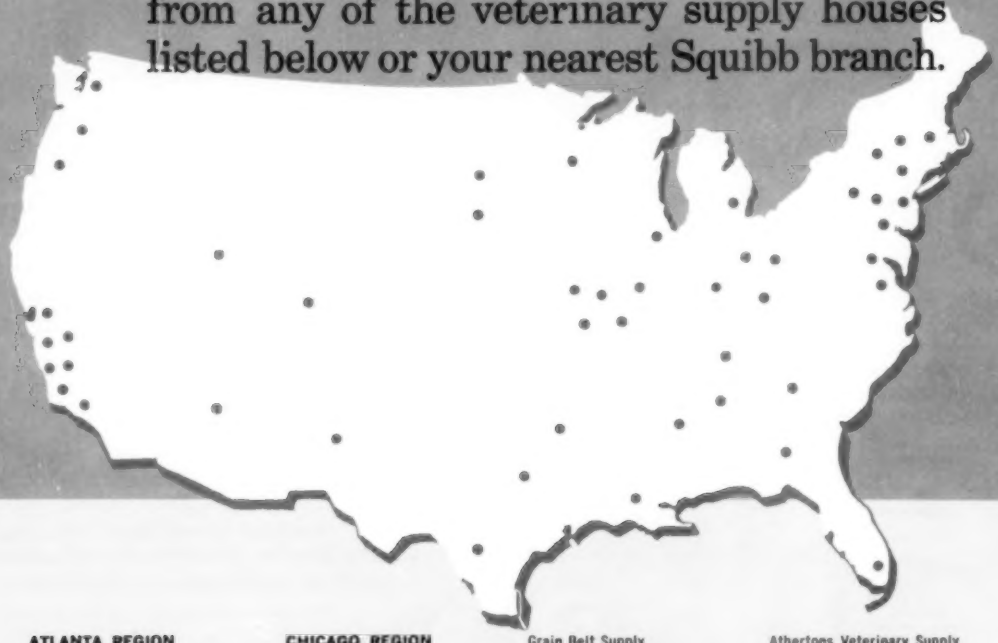

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Great Western Serum Company
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Rocky Mountain Veterinary
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CMP Laboratories
Sioux City, Ia.
Wilson Anchor Serum Company
St. Joseph, Mo.
Missouri Valley Serum Co.
Kansas City, Mo.
Barber & Cochran Veterinary
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Honolulu, T. H.
Valley Veterinary Supply Co.
North Hollywood, Calif.
California Medical Supply Co.
Pasadena, Calif.
Coast Veterinary Corp.
Modesto, Calif.
California Veterinary Supply Co.
Los Angeles, Calif.

New England Veterinary Medical Association. Annual meeting. Hotel Wentworth, Portsmouth, N. H., Sept. 21-24, 1958. C. Lawrence Blakely, 100 Longwood Ave., Boston 15, Mass., secretary-treasurer.

Foreign Meetings

Sixth International Congresses on Tropical Medicine and Malaria. Lisbon, Portugal, Sept. 5-13, 1958. Professor Manuel R. Pinto, Institute of Tropical Medicine, Lisbon, secretary-general. (Membership application forms may be obtained by U.S. veterinarians by writing to the AVMA.)

Regularly Scheduled Meetings

ALABAMA—Central Alabama Veterinary Association, the first Thursday of each month. Dr. G. W. Jones, Main St., Prattville, Ala., secretary-treasurer.

Jefferson County Veterinary Medical Association, the second Thursday of each month. S. A. Price, 213 N. 15th St., Birmingham, secretary.

Mobile-Baldwin Veterinary Medical Association, the third Tuesday of each month. W. David Gross, 771 Holcombe Ave., Mobile, Ala., secretary.

North Alabama Veterinary Medical Association, the second Thursday of November, January, March, May, July, and September, in Decatur, Ala. Ray A. Ashwander, Decatur, Ala., secretary.

North East Alabama Veterinary Medical Association, the second Tuesday of every other month. Leonard J. Hill, P.O. Box 761, Gadsden, Ala., secretary-treasurer.

ARIZONA—Central Arizona Veterinary Medical Association, the second Tuesday of each month. Keith T. Maddy, Phoenix, Ariz., secretary.

Southern Arizona Veterinary Medical Association, the third Wednesday of each month at 7:30 p.m. E. T. Anderson, Rt. 2 Box 697, Tucson, Ariz., secretary.

CALIFORNIA—Alameda-Contra Costa Veterinary Medical Association, the fourth Wednesday of Jan., March, May, June, Aug., Oct., and Nov. Leo Goldston, 3793 Broadway, Oakland 11, Calif., secretary.

Bay Counties Veterinary Medical Association, the second Tuesday of February, April, July, September, and December. Herb Warren, 3004 16 St., San Francisco, Calif., executive secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. R. B. Barsalesu, 2333 E. Mineral King, Visalia, Calif., secretary.

Kern County Veterinary Medical Association, the first Thursday evening of each month. A. L. Irwin, 301 Taft Highway, Bakersfield, Calif., secretary.

Mid-Coast Veterinary Medical Association, the first Thursday of every even month. W. H. Rockey, P. O. Box 121, San Luis Obispo, Calif., secretary.

Monterey Bay Area Veterinary Medical Association, the third Wednesday of each month. Lewis J. Campbell, 90 Corral de Tierra, Salinas, Calif., secretary.

North San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month at the Hotel Covell, in Modesto, Calif. Lyle A. Baker, Turlock, Calif., secretary.

Orange Belt Veterinary Medical Association, the second Monday of each month. Chester A. Maeda, 766 E. Highland Ave., San Bernardino, Calif., secretary.

Orange County Veterinary Medical Association, the third Thursday of each month, Donald E. Lind, 2643 N. Main St., Santa Ana, Calif., secretary.

Peninsula Veterinary Medical Association, the third

Monday of each month. R. M. Granfield, 2600 W. El Camino Real, San Mateo, Calif., secretary-treasurer.

Redwood Empire Veterinary Medical Association, the third Thursday of each month. Robert E. Clark, Napa, Calif., secretary.

Sacramento Valley Veterinary Medical Association, the second Wednesday of each month. W. E. Steinmetz, 4227 Freeport Blvd., Sacramento, Calif., secretary.

San Diego County Veterinary Medical Association, the fourth Tuesday of each month. H. R. Rossoll, 1795 Moore St., San Diego, Calif., secretary.

San Fernando Valley Veterinary Medical Association, the second Friday of each month at the Casa Escobar Restaurant in Studio City. Dr. Rolf Reese, 23815 Ventura Blvd., Calabasas, Calif., secretary.

Santa Clara Valley Veterinary Association, the fourth Tuesday of each month. Kay Beulley, N. Fourth and Gish Rd., San Jose, Calif., secretary.

Southern California Veterinary Medical Association, the last Wednesday of each month. Don Mahan, 1919 Wilshire Blvd., Los Angeles 57, Calif., executive secretary.

Tulare County Veterinary Medical Association, the second Thursday of each month. D. E. Britten, 544 N. Ben Maddox, Visalia, Calif., secretary.

COLORADO—Denver Area Veterinary Society, the fourth Tuesday of every month. Richard C. Tolley, 5060 S. Broadway St., Englewood, Colo., secretary.

Northern Colorado Veterinary Medical Society, the first Monday of each month. M. A. Hammarlund, School of Veterinary Medicine, Colorado A. & M. College, Fort Collins, Colo., secretary.

DELAWARE—New Castle County Veterinary Association, the first Tuesday of each month at 9:00 p.m. in the Hotel Rodney, Wilmington, Del. E. J. Hathaway, Clifton Park Manor, Apt. 73-5, Wilmington 2, Del., secretary.

FLORIDA—Central Florida Veterinary Medical Association, the first Tuesday of each month, time and place specified monthly. Jack H. McElyea, 5925 Edgewater Drive, Orlando, Fla., secretary.

Florida West Coast Veterinary Medical Association, the second Wednesday of each month at the Lighthouse Inn, in St. Petersburg. R. L. Brutus, 336 E. 15th St., Hialeah, Fla., secretary.

Jacksonville Veterinary Medical Association, the first Thursday of every month. Dodsons Restaurant. P. S. Roy, 4443 Atlantic Blvd., Jacksonville, Fla., secretary.

Northwest Florida Veterinary Medical Society, third Wednesday of each month, time and place specified monthly. T. R. Geci, 108B Catherine Ave., Pensacola, Fla., secretary.

Palm Beach Veterinary Society, the last Thursday of each month in the county office building at 810 Datura St., West Palm Beach. J. J. McCarthy, 500-25th Street, West Palm Beach, Fla., secretary.

Ridge Veterinary Medical Association, the fourth Thursday of each month in Bartow, Fla. Paul J. Myers, Winter Haven, Fla., secretary.

South Florida Veterinary Society, the third Wednesday of each month. Time and place specified monthly. Frank Mueller, Jr., 4148 E. 8th Ave., Hialeah, Fla., secretary.

Suwannee Valley Veterinary Association, the fourth Tuesday of each month, Hotel Thomas, Gainesville. W. B. Martin, Jr., 3002 N. W. 6th St., Gainesville, Fla., secretary.

Volusia County Veterinary Medical Association, the

58-2

fourth Thursday of each month. A. E. Hixon, 131 Mary St., Daytona Beach, Fla., secretary.

GEORGIA—Atlanta Veterinary Society, the second Tuesday of every month at the Elks Home on Peachtree St., Atlanta, Ga. J. L. Christopher, Smyrna, Ga., secretary.

ILLINOIS—Chicago Veterinary Medical Association, the second Tuesday of each month. Mark E. Davenport, Jr., 215 S. Edgewood Ave., LaGrange, Ill., secretary.

Eastern Illinois Veterinary Medical Association, the first Thursday of March, June, September, and December. A one-day clinic is held in May. H. S. Bryan, College of Veterinary Medicine, University of Illinois, Urbana, secretary.

INDIANA—Central Indiana Veterinary Medical Association, the second Wednesday of each month. Peter Johnson, Jr., 4410 N. Keystone Ave., Indianapolis 5, secretary.

Michiana Veterinary Medical Association, the second Thursday of every month except July and December, at the Hotel LaSalle, South Bend, Ind. J. M. Carter, 3421 S. Main St., Elkhart, Ind., secretary.

Tenth District Veterinary Medical Association, the third Thursday of each month. J. S. Baker, P. O. Box 52, Pendleton, Ind., secretary.

IOWA—Cedar Valley Veterinary Medical Association, the second Monday of each month, except January, July, August, and October in Black's Tea Room, Waterloo, Iowa. A. J. Cotten, Grundy Center, secretary.

Central Iowa Veterinary Medical Association, the third Monday of each month, except June, July, and August, at 6:30 p.m., Breeze House, Ankeny, Iowa. John Herrick, Ames, secretary.

Coon Valley Veterinary Medical Association, the second Wednesday of each month, September through May, at 7:30 p.m., Cobblestone Inn, Storm Lake, Iowa. Robert McCutcheon, Holstein, secretary.

East Central Iowa Association, the second Thursday of each month at 6:30 p.m., usually in Cedar Rapids, Iowa. Dr. J. G. Irwin, Iowa City, secretary.

Fayette County Veterinary Medical Association, the third Thursday of each month at 6:30 p.m. in West Union, Iowa. H. J. Morgan, West Union, secretary.

Lakes Veterinary Association, the first Tuesday of each month, September through May, at 6:30 p.m., at the Gardson Hotel, Estherville, Iowa. Barry Barnes, Milford, secretary.

North Central Iowa Veterinary Medical Association, the third Thursday of April, at the Warden Hotel, Fort Dodge, Iowa. H. Engelbrecht, P. O. Box 797, Fort Dodge, secretary.

Northeast Iowa-Southern Minnesota Veterinary Association, the first Tuesday of February, May, August, and November at the Wisneslick Hotel, Decorah, Iowa, 6:30 p.m. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

Northwest Iowa Veterinary Medical Association, the second Tuesday of February, May, September, and December, at the Community Bldg., Sheldon. W. Ver Meer, Hull, secretary.

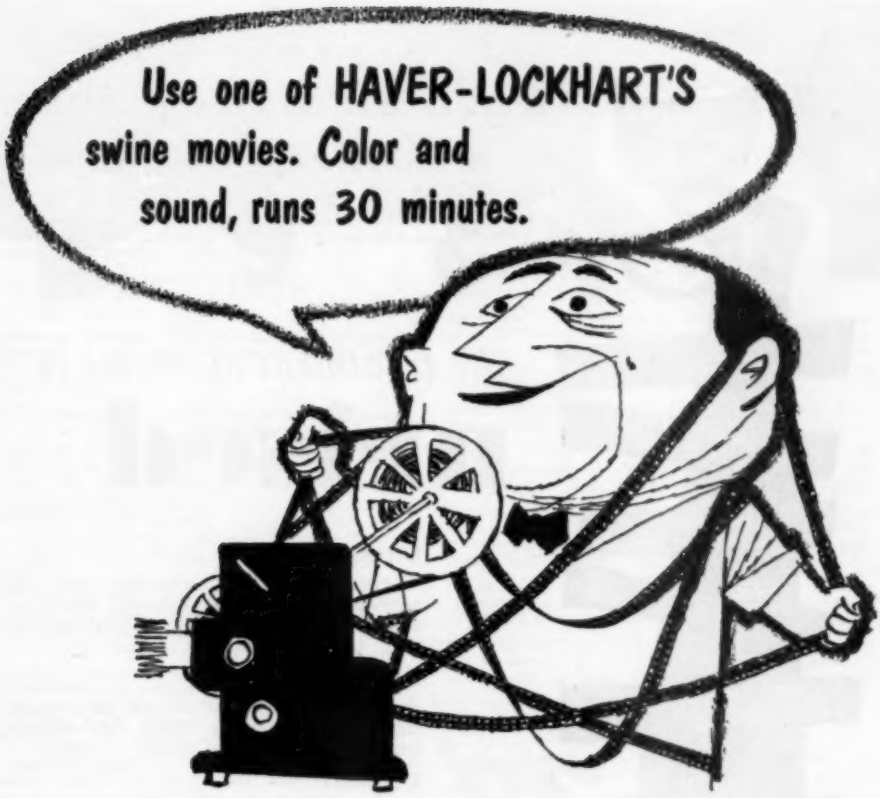
Southeastern Iowa Veterinary Association, the first Tuesday of each month at Mt. Pleasant, Iowa. Warren Kilpatrick, Mediapolis, secretary.

Southwestern Iowa Veterinary Medical Association, the first Tuesday of April and October, Hotel Chieftain, Council Bluffs, Iowa. J. P. Stream, Creston, secretary.

Upper Iowa Veterinary Medical Association, the third Tuesday of each month at 7:00 p.m., at All Vets Center, Clear Lake, Iowa. Richard Baum, Osage, secretary.

KENTUCKY—Central Kentucky Veterinary Medical Association, the first Wednesday of each month. L. S. Shircell, Varsailles Rd., Frankfoyd, secretary.

Jefferson County Veterinary Society of Kentucky, Inc.,



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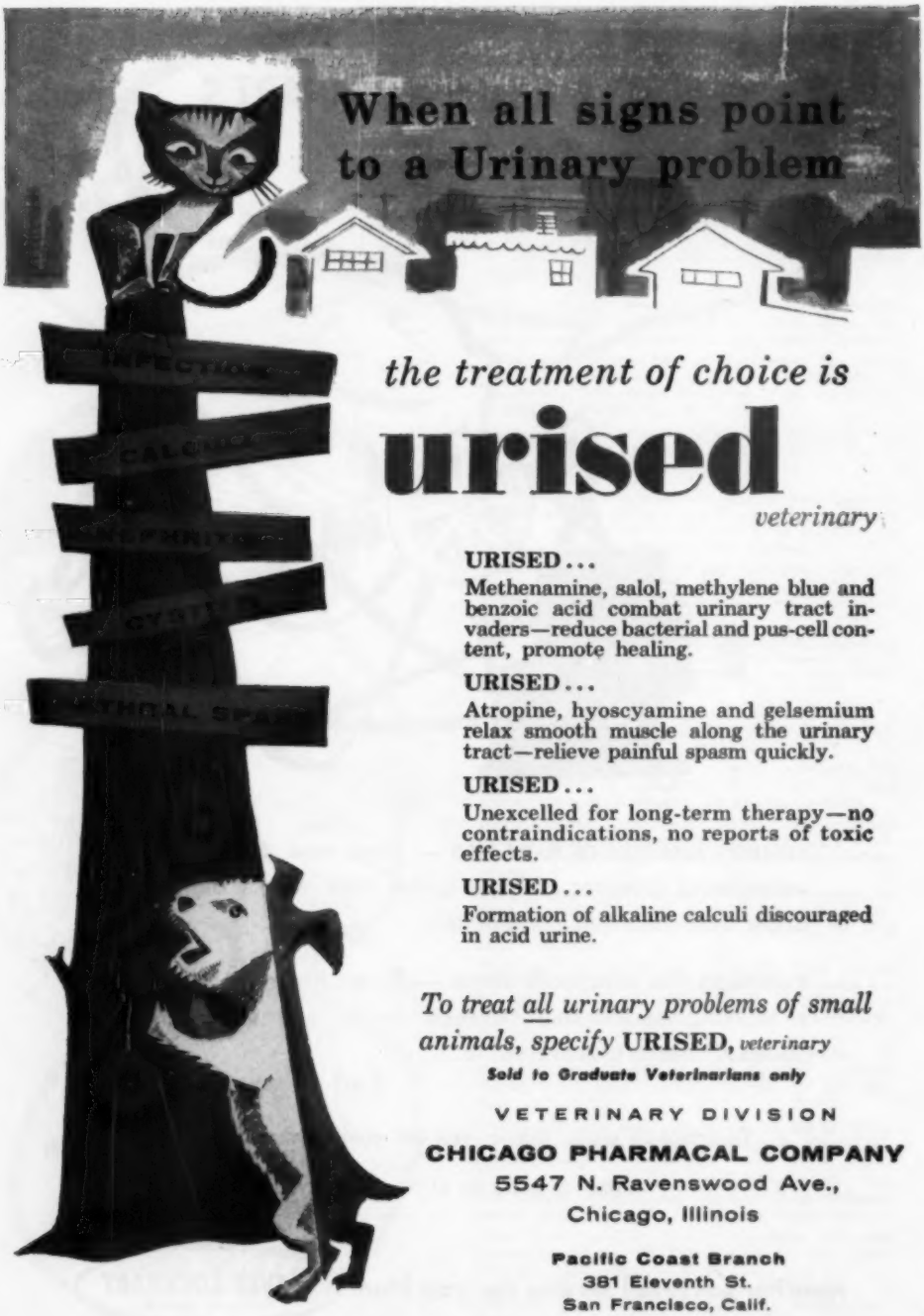

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the first Wednesday evening of each month in Louisville or within a radius of 50 miles. W. E. Bewley, P.O. Box "H," Crestwood, secretary.

MARYLAND—Baltimore City Veterinary Medical Association, the second Thursday of each month, September through May (except December), at 9:00 p.m., at the Park Plaza Hotel, Charles and Madison St., Baltimore, Md. Norman Herbert, 3506 Joann Drive, Baltimore 7, Md., secretary.

MICHIGAN—Mid-State Veterinary Medical Association, the fourth Thursday of each month with the exception of November and December. Robert E. Kader, 5034 Armstrong Rd., Lansing 17, Mich., secretary.

Saginaw Valley Veterinary Medical Association, the last Wednesday of each month. S. Correll, Rt. 1, Midland, Mich., secretary.

Southeastern Veterinary Medical Association, the fourth Wednesday of every month, September through May. Gilbert Meyer, 14003 E. Seven Mile Rd., Detroit 5, Mich., secretary.

MISSOURI—Greater St. Louis Veterinary Medical Association, the first Friday of each month (except July and August), at the Coronado Hotel, Lindell Blvd. and Spring Ave., St. Louis, Mo., at 8 p.m. Chester R. Pliegge, 4249 Peck St., St. Louis 7, Mo., secretary.

Kansas City Veterinary Medical Association and Kansas City Small Animal Hospital Association, the third Thursday of each month at the Hotel President, Kansas City, Mo. Frank A. O'Donnell, Parksville, Mo., secretary-treasurer.

NEW JERSEY—Central New Jersey Veterinary Medical Association, the second Thursday of November, January, March, and May at Old Hights Inn, Hightstown, N. J. David C. Tudor, Cranbury, N. J., secretary.

Metropolitan New Jersey Veterinary Medical Association, the third Wednesday evening of each month from October through April at the Academy of Medicine, 91 Lincoln Park South, Newark, N. J. Myron S. Arlein, 2172 Milburn Ave., Maplewood, N. J., secretary.

Northern New Jersey Veterinary Association, the fourth Tuesday of each month at the Casa Mana in Teaneck. James R. Tanzola, Upper Saddle River, secretary.

Northwest Jersey Veterinary Society, the third Wednesday of every odd month. G. R. Muller, 43 Church St., Lambertville, N. J., secretary.

Southern New Jersey Veterinary Medical Association, the fourth Tuesday of each month at the Collingswood Veterinary Hospital, Collingswood. R. M. Sauer, secretary.

NEW YORK—New York City, Inc., Veterinary Medical Association of, the first Wednesday of each month at the New York Academy of Sciences, 2 East 63rd St., New York City. C. E. DeCamp, 43 West 61st St., New York 23, N. Y., secretary.

New York State Veterinary College, Annual conference for veterinarians. Cornell University, Ithaca. W. A. Hagan, New York State Veterinary College, Cornell University, Ithaca, N. Y., dean.

Monroe County Veterinary Medical Association, the first Thursday of even-numbered months except August. Irwin Bircher, 50 University Ave., Rochester, N. Y., secretary.

NORTH CAROLINA—Central Carolina Veterinary Medical Association, the second Wednesday of each month at 7:00 p.m. in the O'Henry Hotel, Greensboro. Joseph A. Lombardo, 411 Woodlawn Ave., Greensboro, secretary.

Eastern North Carolina Veterinary Medical Association, the first Friday of each month, time and place specified monthly. Byron H. Brow, Box 453, Goldsboro, N. Car., secretary.

Piedmont Veterinary Medical Association, the last Friday of each month. Ted L. James, Box 243, Newton, N. Car.

Twin Carolinas Veterinary Medical Association, the third Thursday of each month in the Orange Bowl Restaurant, Rockingham, N. Car., at 7:30 p.m. James R. Burgess, Rockingham, N. Car., secretary.

Western North Carolina Veterinary Medical Association, the second Thursday of every other month at 7:00 p.m., in the George Vanderbilt Hotel, Ashville, N. Car. Vilu Lind, 346 State St., Marion, N. Car., secretary.

OHIO—Cincinnati Veterinary Medical Association, the third Tuesday of every month at Shuller's Wigwam, 6210 Hamilton Ave., at North Bend Road. G. C. Lewis, Cincinnati, Ohio, secretary-treasurer.

Columbus Academy of Veterinary Medicine, every month, September through May. E. M. Simonson, Columbus, Ohio, secretary-treasurer.

Cuyahoga County Veterinary Medical Association, the first Wednesday in September, October, December, February, March, April, and May, at 9:00 p.m. at the Carter Hotel, Cleveland, Ohio. F. A. Coy, Cleveland, Ohio, secretary.

Dayton Veterinary Medical Association, the third Tuesday of every month. O. W. Fallang, Dayton, secretary.

Killbuck Valley Veterinary Medical Association, the first Wednesday of alternate months beginning with February. D. J. Kern, Killbuck, Ohio, secretary-treasurer.

Mahoning County Veterinary Medical Association, the third Tuesday of each month, at 9:00 p. m., Youngstown Maennerchor Club, Youngstown, Ohio. Sam Segall, 2935 Glenwood Ave., Youngstown, secretary.

Miami Valley Veterinary Medical Association, the first Wednesday of December, March, June, and September. J. M. Westfall, Greenville, Ohio, secretary-treasurer.

North Central Ohio Veterinary Medical Association, the last Wednesday of each month except during the summer. R. W. McClung, Tiffin, Ohio, secretary-treasurer.

Northwestern Ohio Veterinary Medical Association, the last Wednesday of March and July. C. S. Alvanos, Toledo, Ohio, secretary-treasurer.

Stark County Veterinary Medical Association, the second Tuesday of every month, at McBrides Emerald Lounge, Canton, Ohio. M. L. Willen, 4423 Tuscarawas St., Canton, Ohio, secretary.

Summit County Veterinary Medical Association, the last Tuesday of every month (except June, July, and August), at the Mayflower Hotel, Akron, Ohio. M. L. Scott, Akron, Ohio, secretary-treasurer.

Tri-County Veterinary Medical Association, the fourth Wednesday of January, May, and September. Mrs. R. Slusher, Mason, Ohio, secretary-treasurer.

OKLAHOMA—Oklahoma County Veterinary Medical Association, the second Wednesday of every month, 7:30 p.m., Patrick's Foods Cafe, 1016 N.W. 23rd St., Oklahoma City. Forest H. Stockton, 2716 S.W. 29th St., Oklahoma City, Okla., secretary.

Tulsa Veterinary Medical Association, the third Thursday of each month in Directors' Parlor of the Brookside State Bank, Tulsa, Okla. Don L. Hohmann, 538 S. Madison St., Tulsa, Okla., secretary.

OREGON—Portland Veterinary Medical Association, the second Tuesday of each month, at 7:30 p.m., Ireland's Restaurant, Lloyds', 718 N.E. 12th Ave., Portland. Donald L. Moyer, 8415 S.E. McLoughlin Blvd., Portland 2, Ore., secretary.

Willamette Veterinarian Medical Association, the third Tuesday of each month, except July and August, at the Marion Hotel, Salem. Marvin M. Corff, McMinnville, Ore., secretary

PENNSYLVANIA—Keystone Veterinary Medical Association, the fourth Wednesday of each month at the University of Pennsylvania, School of Veterinary Medicine. Raymond C. Snyder, N. E. Corner 47th St. and Hazel Ave., Philadelphia 43, Pa., secretary.

Lehigh Valley Veterinary Medical Association, the first Tuesday of each month. Stewart Rockwell, 10th and Chestnut Sts., Emmaus, Pa., secretary.

Pennsylvania Northern Tier Veterinary Medical Association, the third Wednesday of each odd numbered month. R. L. Michel, Troy, Pa., secretary.

SOUTH CAROLINA—Piedmont Veterinary Medical Association, the third Wednesday of each month at the Fairforest Hotel, Union, S. Car. Worth Lanier, York, S. Car., secretary.

TEXAS—Coastal Bend Veterinary Association, the second Wednesday of each month. J. Marvin Prewitt, 4141 Lexington Blvd., Corpus Christi, Texas, secretary.

VIRGINIA—Central Virginia Veterinarians' Association, the third Thursday of each month at the William Byrd Hotel in Richmond at 8:00 p.m. M. R. Levy, 312 W. Cary Ct., Richmond 20, Va., secretary.

Northern Virginia Veterinary Conference, the second Tuesday of each month. Francis E. Mullen, 1130 S. Main St., Harrisonburg, Va., secretary-treasurer.

Northern Virginia Veterinary Society, the Second Wednesday of every third month. Meeting place announced by letter. H. C. Newman, Box 145, Merrifield, secretary.

Southwest Virginia Veterinary Medical Association, the first Thursday of each month. I. D. Wilson, Blackburg, secretary.

WASHINGTON—Seattle Veterinary Medical Association, the third Monday of each month, Magnolia American Legion Hall, 2870 32nd W., Seattle, Wash. William S. Green, 9637 S. E. 36th, Mercer Island, Wash., secretary.

South Puget Sound Veterinary Association, the second Thursday of each month except July and August. O. I. Bailey, P. O. Box 906, Olympia, Wash., secretary.

WEST VIRGINIA—Kyowva (Ky., Ohio, W. Va.) Veterinary Medical Association, the second Thursday of each month in the Hotel Prichard, Huntington, W. Va., at 8:30 p.m. Harry J. Fallon, 200 5th St., W. Huntington, W. Va., secretary.

WISCONSIN—Central Wisconsin Veterinary Medical Association, the second Tuesday of each quarter (March, June, Sept., Dec.). R. J. O'Hern, P.O. Box 617, Cumberland, Wis., secretary.

Dane County Veterinary Medical Association, the second Thursday of each month. Dr. E. P. Pope, 409 Farley Ave., Madison, Wis., secretary.

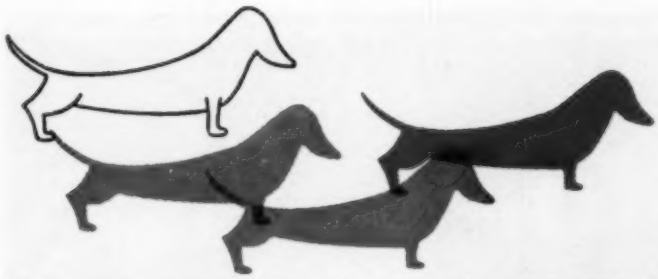
Milwaukee Veterinary Medical Association, the third Tuesday of each month, at the Half-Way House, Blue Mound Rd. Dr. R. H. Steinkraus, 7701 N. 59th St., Milwaukee, Wis., secretary.

Northeastern Wisconsin Veterinary Medical Association, the third Wednesday in April. William Madson, 218 E. Washington St., Appleton, Wis., secretary.

Rock Valley Veterinary Medical Association, the first Wednesday of each month. W. E. Lyle, P. O. Box 107, Deerfield, Wis., secretary.

Southeastern Veterinary Medical Association, the third Thursday of each month. John R. Curtis, 419 Cook St., Portage, Wis., secretary.

Wisconsin Valley Veterinary Medical Association, the second Tuesday of every other month. E. S. Scobell, Rt. 2, Wausau, Wis., secretary.



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Fox Terrier mammary tumor	1 cc. I.M., ½ hour preoperatively	"...capillary hemorrhage decreased to negligible...."
English Thoroughbred excise lachrymal duct	20 cc. I.V., at close of surgery	"...in 10 minutes bleeding had come to a practical stop...."
German Shepherd penal sarcoma	hemorrhage 5 hours postoperatively – 3 cc. I.V.	"Bleeding lessened in 10 minutes... ceased in 20 minutes."
*Thoroughbred Gelding** amputate scirrhous cord	bleeding despite ligatures – 10 cc. I.V., 10 cc. I.M.	"Seeping hemorrhage was arrested in 10 to 15 minutes."
Terrier panhysterectomy	Profuse bleeding during surgery – 2 cc. I.M.; 2 cc. I.V., 10 minutes later	"...marked reduction in hemorrhage within 4 minutes... hemostasis in 10 minutes."

*N.B. A second thoroughbred under identical conditions but without KOAGAMIN: postoperative seeping hemorrhage – ½ hour; oozing – an additional 2 hours.

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1. Rachman, M., and Frucht, T. R.: Vet. Med. *49*:341, 1954.

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Ambitious veterinarian wanted as partner in long-established mixed animal practice. Must be experienced, especially in large animals. Hospital and complete facilities available. State qualifications, references in first letter. Address "Box E 1," c/o JOURNAL of the AVMA.

Progressive, ambitious veterinarian for member A.A.H.A. hospital, located in eastern New York State. Modern living-quarters available. Qualifications for New York license essential. Excellent opportunity. Give references and salary expected. Address "Box E 9," c/o JOURNAL of the AVMA.

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Relief veterinarian, experienced and competent, will operate your practice while you are on vacation. Available for New York City and suburbs. Licensed in New York and Connecticut. Address "Box A 36," c/o JOURNAL of the AVMA.

Veterinarian wants non-practice work in New York State or Northeast. Ten years good, well-varied experience at age 32. Army satisfied. Please do not offer janitor wages. Address "Box E 10," c/o JOURNAL of the AVMA.

Veterinarian, D.V.M., foreign, 44 years old, married, experienced in production and control of vaccines and antisera for human and veterinary use, advanced research worker of development and scientific study of biologic products, experienced in modern tissue culture techniques, desires permanent position in biological laboratory of pharmaceutical industry or veterinary school. Now working in Section of Epidemiology and Preventive Medicine, Yale University School of Medicine, New Haven, Conn. Address "Box E 3," c/o JOURNAL of the AVMA.

1957 graduate of approved school desires position in small animal practice. Available in May; will go anywhere. Address "Box E 14," c/o JOURNAL of the AVMA.

Wanted—Practices

Desire to purchase or lease mixed practice in Middlewest. Address "Box B 41," c/o JOURNAL of the AVMA.

Small animal surgeon, several years in practice, 29, single, reliable, conscientious, best references, California license, desires lease arrangement, with option, on small animal hospital. Will consider association leading to permanent professional future. Address "Box E 6," c/o JOURNAL of the AVMA.

Experienced practitioner, with references, age 32, married, wants to rent or lease with option to buy, active small animal hospital; Southeast, Middlewest, or West Coast preferred. Address "Box E 13," c/o JOURNAL of the AVMA.

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Graduate of AVMA approved school desires to purchase or lease good mixed practice. Prefer town of 10,000 population or more. Address "Box E 15," c/o JOURNAL of the AVMA.

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Attractive, modern, well-established small animal hospital, excellent practice, for sale due to death of owner; includes real estate. Located suburban southeastern city over half million population. Will require substantial cash. Address "Box B 35," c/o JOURNAL of the AVMA.

For sale, in tidewater Virginia, a general practice grossing an average of $17,000 for the last seven years. Large animal practice (60%) steady; small animal practice increasing as summer resort and retirement population increases. Ranch-type house and hospital included. Entering partnership. Terms can be arranged. $35,000. Address "Box B 30," c/o JOURNAL of the AVMA.

Long-established, active small animal hospital, completely modern, for sale or lease. Only animal hospital in middlewest city of 55,000 population. Address "Box B 32," c/o JOURNAL of the AVMA.

Modern small animal hospital, built 1954, Danville, Va. Kirschner plastic cages installed. Excellent location. Reasonable terms. Dr. W. K. Barker, 1700 Chadwick Dr., Richmond, Va.

Rent or lease—modern, furnished animal hospital. Excellent location; large fenced yards, parking space. Practice established 40 years. Growing community. Agreeable terms. Reasonable housing. Contact Mrs. S. V. Brown, Barnwell, So. Car.

Small animal hospital and living-quarters in Los Angeles suburb. Established 17 years. No real estate. Very reasonable rent; good lease. Address "Box E 2," c/o JOURNAL of the AVMA.

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Mixed practice, established 17 years, located in north Alabama county seat; good clientele. Grossed $21,000 yearly for last five years. Asking real estate value: $18,500. Address "Box E 5," c/o JOURNAL of the AVMA.

Thriving mixed practice and modern hospital in Connecticut for rent, with option to buy. Rent applied to purchase price; unusual opportunity. Only individuals holding Connecticut license considered. Address "Box E 7," c/o JOURNAL of the AVMA.

Practice for sale or lease to reliable, responsible party; 90% large animal. Located in southeastern Nebraska. New, modern home and office. Terms and financing can be arranged for new graduate. Address "Box E 8," c/o JOURNAL of the AVMA.

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For immediate sale—modern small animal hospital and residence on Long Island, N.Y. Some capital and rapid action required. Address "Box E 12," c/o JOURNAL of the AVMA.

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Northern Indiana small animal hospital desires experienced veterinarian for three weeks, commencing March 10, while practitioner is vacationing. Lucrative salary and furnished apartment. Write immediately. Address "Box E 16," c/o JOURNAL of the AVMA.

New Illinois Farrowing Record.—In the spring of 1957, the average for all sows farrowing, in Illinois, was 7.13 pigs per litter compared with 5.8 pigs 25 years ago. This is the first time the average has been more than 7 pigs.—*Prairie Farmer (Jan. 4, 1958): 21.*

How Far Can a Dog See?—Of 12 large dogs tested, by a German investigator, the one with the keenest sight could perceive an object at 810 meters (½ mile) but could not recognize its master beyond 150 meters (165 yards). Small dogs may see less well. —*All Pets (Jan., 1958): 36.*

Could Birds Winter on the Moon?

In 1703, some believed that birds migrated to the moon in about 60 days and slept while they flew. A century later some believed that they turned to frogs in the winter or were transformed to winter birds. In 1887, an experiment was required to prove that swallows did not winter in the mud of ponds.

Much has been learned about migration by legbanding birds. Minnesota robins winter from Texas east, although a few remain in sheltered northern areas. Blue herons from northern states are found in Panama and Cuba. Iowa crows winter in huge flocks in Kansas or Oklahoma. Many birds cross the equator to a corresponding southern zone.

Iowa swallows are found in Bolivia or Peru, bobolinks in northern Argentina, and the nighthawk catches insects over the Argentina pampas. Even humming birds cross the Gulf of Mexico in a single flight, 500 miles without resting.

Plovers and terns are the greatest flyers, some flying nonstop from Nova Scotia to South America. The Arctic tern sees the most daylight, nesting 7 degrees from the North Pole and wintering on the shores of Antarctica, migrating 25,000 miles each year. The tiny birds, warblers, sparrows, and others, fly mostly at night and feed by day. Birds seldom migrate at altitudes of 3,000 feet and when over the ocean they barely clear the waves.—*John Madson in Des Moines Register (Nov. 3, 1957): 1.*

Feats of the English Shepherd.—A good working dog is worth three or four men for handling livestock. One dog brings in the milking cows, leaving the dry cows in the pasture. Another dog, whose mistress had hens that ranged in tall grass, would gather the eggs from the grass and pile them at the henhouse door, while she gathered eggs inside. When a bull broke out of his pen, 2 pups, 5 months old, kept him cornered until the pen was repaired. One dog grabbed an unwelcome polecat, jumped into a pond, and held it under water until it drowned.

Shepherds are also fine guardians of children. When a small boy wandered into a pen with a sow and her newborn pigs, the dog stayed between the sow and the boy until the latter was rescued. When another boy waded into a pond, the dog pulled him back by the seat of the pants whenever he thought the lad was getting in too deep.—*Progressive Farmer (Aug., 1957): 85.*

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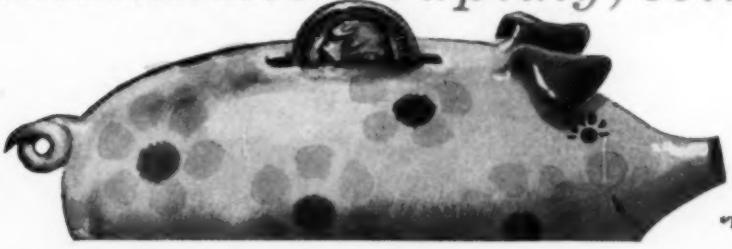

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B	10%	medium	very poor
C	7%	fine	fair
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Jen-Sal	**13%**	**very fine**	**excellent**

maximum tissue concentration for dependable immunity

High tissue content of Jen-Sal Rabies Vaccine provides high vaccine virus titres for maximum immune response. In critical tests, dogs vaccinated with a standard 3 cc. dose of Jen-Sal vaccine consistently withstood virulent street virus challenge.

homogenized tissue reconstitution

Jen-Sal Rabies Vaccine reconstitutes in seconds. Tissue particles, minute enough to permit passage through a 24 gauge needle, assure a vaccine which is both effective and easy to administer. No evidence of undue pain or local irritation is noted on routine administration.

newest production refinements give you a superior product

Jen-Sal Rabies Vaccine contains living, safety-proved Flury virus modified by egg passage. Virus loss in storage is inhibited by new lyophilization refinements plus a Jen-Sal stabilizing agent. Meticulous control and rigorous testing guarantee a uniform vaccine of incomparable quality. Supplied in 10 dose bulk vial and 5—1 dose package.

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